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INTRODUCTION

The volume being the second edition of the *Fauna of British India* series on fishes by Dr. F. Day, is the third under the *Fauna of India* on Pisces; the volume deals with suborder Siluroidei, division Siluri of order Cypriniformes comprising 146 species and 10 subspecies belonging to 11 families, 3 new subfamilies and 47 genera inclusive of a new genus, *Pseudolaguvia* and a new species, *Hara horai*. In Day's volume, 117 species belonging to 32 genera were included in a single family Siluridae of order Physostomi. The increase in the number of families and subfamilies of order Siluroidei is due to the recent classificatory changes adopted by Dr. D. S. Jordan,[1] Dr. C. T. Regan[2], Dr. L. S. Berg[3], and Dr. S. L. Hora[4].

The classification adopted is mainly after L. S. Berg's "Classification of fishes both recent and fossil", *Trav. Inst. Zool. Acad. Sci. U.S.S.R.*, Leningrad, 5, pp. 87—517, figs. 1—190., 1940.

The keys are artificial and not strictly phylogenetic. They are purely regional in application and deal with species, subspecies, genera, subgenera, families, subfamilies and other higher taxonomic categories mentioned in the volume. A running field key for the identification of the 156 species (including 10 subspecies) of suborder Siluroidei, division Siluri of order Cypriniformes is provided towards the end.

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1. Jordan, D. S.	A classification of fishes, *Stanford Univ. Publ.*, Vol. 3, **2**, p. 145 (1923).
2. Regan, C. T.	Fishes : *Encyclopaedia Britanica*, **9**, 14th ed., p. 305 (1929).
3. Berg, L. S.	Classification of fishes both recent and fossil. *Trav. Inst. Zool. Acad. Sci. U.S.S.R.*, Leningrad, **5**, pp. 446—448 (1940).
4. Hora, S. L.	Siluroid fishes of India, Burma and Ceylon, V. *Rec. Indian Mus.*, Calcutta **38**, p. 209 (1936).

Subspecies, species and genera are numbered in Arabic numerals; families, superfamilies, orders and divisions in capital Roman numerals; while subgenera, subfamilies and suborders are in small Roman numerals; their numbers are serially in continuation with the second volume of the series; Arabic or Roman numerals, as the case may be, precede the respective systematic units.

Orders and divisions are in All Caps Roman, suborders in All Caps Italics, superfamilies and families in Cap and Small Caps Roman, subfamilies in Cap and Small Caps Italics, genera, subgenera, species and subspecies in Antique while occurring above synonymies and genera and subgenera in Antique while occurring in keys.

Species under each genus have been arranged alphabetically. In the specific synonymies the first is the original reference with the type locality and, as far as possible, the name of the institution where the type is deposited is given; others are with respect to the confines of the Indian region and beyond. Relevant vernacular names of the species are given along with the standardised Indian vernacular names, wherever available, below the specific synonymy.

Descriptions of the species are based mostly on those of Dr. F. Day and wherever necessary either after original authors or on materials available in the collections of the Zoological Survey of India. Illustrations reproduced from other authors are duly acknowledged in the respective legends of the text-figures and plates. In this case special thanks are due to the authorities of the Bombay Natural History Society for their permission to reproduce some of the figures and plates in this volume.

Of the total number of 156 species (including 10 subspecies) dealt in this volume, 101 are exclusively freshwater, 5 freshwater with brackish water tolerance, 19 freshwater descending to tidal waters, 6 estuarine ascending tidal waters, 19 marine ascending estuaries and tidal waters, and 6 exclusively marine; the estuarine and marine species are represented by the families Tachysuridae and Plotosidae.

Out of 156 species (including 10 subspecies) 114 species (including 7 subspecies) are endemic to the Indian region while the remaining 42 (including 3 subspecies) are distributed beyond the Indian region. Out of 114 endemic species (including 7 subspecies), 4 species (including one subspecies), being freshwater are distributed as : 1 species *viz.*, *Ompok sindensis* (Day) and 1 subspecies *viz.*, *Mystus* (*Mystus*) *pulcher horai* Jayaram to Pakistan; 1 species *viz.*, *Myersglanis blythi* (Day) to Nepal; and 1 species *viz.*, *Heteropneustes microps* (Gthr.) to Ceylon. Of the remaining 110 endemic species (including 6 subspecies), 45 species (including 2 subspecies) are restricted to India, 20 species (including 1 subspecies) to Burma and the remaining 45 species occurring simultaneously in more than one country of the Indian region.

Out of the 45 endemic species (including 2 subspecies) restricted to India, 3 species *viz.*, *Hemipimelodus tenuispinis* (Day) , *Tachysurus malabaricus* (Day) and *Tachysurus nella* (V.) are exclusively marine; 1 species *viz.*, *Tachysurus satparanus* (Chaudhuri) is estuarine ascending tidal lakes; 3 species *viz.*, *Mystus* (*Mystus*) *malabaricus* (Jerdon), *Mystus* (*Mystus*) *montanus* Jerdon and *Mystus mystus oculatus* (V.) are freshwater descending tidal waters; 38 species (including 3 subspecies) *viz.*, *Mystus* (*Aorichthys*) *seenghala* Sykes, *Mystus* (*Mystus*) *punctatus* (Jerdon), *Mystus* (*Mystus*) *vittatus dibrugarensis* Chaudhuri, *Rama rama* (Ham.), *Rita chrysea* Day, *Rita kuturnee* (Sykes), *Rita pavimentatus* (V.), *Clarias dayi* Hora, *Clarias dussumieri* V., *Horaglanis krishnai* Menon, *Olyra kempi* Chaudhuri, *Olyra laticeps* Mc Clell., *Clupisoma montana* Hora, *Eutropiichthys goongwaree* (Sykes), *Neotropius khavalchor* Kulkarni, *Pseudeutropius mitchelli* (Gthr.), *Silonia childreni* (Sykes), *Ompok malabaricus* (V.), *Silurus cochinchinensis wynaadensis* (Day), *Batasio batasio* (Ham.), *Batasio travancoria* Hora & Law, *Erethistoides montana montana* Hora, *Erethistoides montana pipri* Hora, *Conta conta* (Ham.), *Conta elongata* (Day), *Hara horai* sp. nov., *Laguvia shawi* Hora, *Glyptothorax brevipinnis* Hora, *Glyptothorax conirostre poonaensis* Hora, *Glyptothorax housei* Herre. *Glyptothorax lonah* (Sykes), *Glyptothorax madraspatanus* Day, *Glyptothorax saisi* Jenkins, *Glyptothorax stoliczkae* (Steind.), *Glyptothorax striatus* Mc Clelland, *Glyptothorax trewavasae* Hora, *Exostoma labiatus* McClelland, and *Sisor rhabdophorus* Ham. are exclusively freshwater.

Of the 20 endemic species (including 1 subspecies) restricted to Burma, 2 species *viz.*, *Tachysurus acutirostris*

(Day) and *Tachysurus burmanicus* (Day) are estuarine ascending tidal rivers; 1 species *viz.*, *Mystus* (*Mystus*) *macrophthalmus* (Day) is freshwater descending tidal waters; and the remaining 17 species (including 1 subspecies) *viz.*, *Akysis pictus* Gthr., *Akysis prashadi* Hora, *Amblyceps murray-stuarti* Chaudhuri, *Mystus* (*Aorichthys*) *leucophasis* (Blyth), *Mystus* (*Aorichthys*) *rufescens* (Vinciguerra), *Mystus* (*Mystus*) *peguensis* (Blgr.), *Mystus* (*Mystus*) *pulcher pulcher* (Chaudhuri), *Olyra burmanica* Day, *Olyra horai* (Prashad & Mukerji), *Clupisoma prateri* Hora, *Hara filamentosa* Blyth, *Pseudolaguvia tuberculatus* (Prashad & Mukerji), *Euchiloglanis feae* (Vinciguerra), *Exostoma berdmorei* Blyth, *Exostoma stuarti* Hora, *Exostoma vinciguerrae* Regan and *Oreoglanis macropterum* (Vinciguerra) are purely freshwater.

Of the 45 endemic species occurring in more than one country of the Indian region, 1 species, *viz.*, *Tachysurus serratus* (Day) is purely marine; 6 species *viz.*, *Osteogeneiosus sthenocephalus* (Day,) *Tachysurus jella* (Day), *Tachysurus nenga* (Ham.), *Tachysurus parvipinnis* (Day), *Tachysurus platystomus* (Day) and *Tachysurus subrostoratus* (Bennett), are marine ascending estuaries and tidal rivers; 2 species *viz.*, *Tachysurus arius* (Ham.) and *Hemipimelodus jatius* (Ham.) are estuarine ascending tidal waters; 9 species *viz.*, *Rita rita* (Ham.), *Ailia coila* (Ham.), *Clupisoma garua* (Ham.), *Proeutropiichthys taakree* (Sykes), *Pseudeutropius atherinoides* (Bl.), *Silonia silondia* (Ham.), *Gagata cenia* (Ham.), *Gagata gagata* (Ham.) and *Gagata nangra* (Ham.) are freshwater descending tidal rivers; 3 species *viz.*, *Mystus* (*Aorichthys*) *aor* (Ham.), *Mystus* (*Mystus*) *armatus* (Day) and *Mystus* (*Mystus*) *keletius* (V.) are freshwater with brackish water tolerance; 24 species *viz.*, *Mystus* (*Mystus*) *tengara* (Ham.), *Olyra longicaudata* Mc Clell., *Ailiichthys punctata* Day, *Eutropiichthys murius* (Ham.), *Ompok pabo* (Ham.), *Silurus gangelica* (Peters), *Gagata itchkea* (Sykes), *Gagata viridescens* (Ham.), *Erethistes pusillus* M. & T., *Hara hara* (Ham.,), *Hara jerdoni* Day, *Laguvia rebeiroi* Hora, *Glyptothorax annandalei* Hora, *Glyptothorax cavia* (Ham.), *Glyptothorax horai* Shaw and Shebbeare, *Glyptothorax kashmirensis* Hora, *Glyptothorax pectinopterus* Mc Clell., *Glyptothorax telchitta* (Ham.), *Euchiloglanis hodgarti* Hora, *Glyptosternon stoliczkae* (Day) and *Pseudecheneis sulcatus* Mc Clell. are exclusively freshwater.

The 45 endemic species occurring in more than one country of the Indian region are distributed as follows : 1 species *viz.*, *Mystus* (*Mystus*) *menoda* (Ham.) in India, Pakistan, Nepal and Burma; 3 species *viz.*, *Gagata cenia* (Ham.), *Ailia coila* (Ham.) and *Clupisoma garua* (Ham.) in India, Pakistan and Nepal; 1 species *viz.*, *Glyptothorax cavia* (Ham.) in India, Nepal and Burma; 7 species *viz.*, *Hemipimelodus jatius* (Ham.), *Tachysurus arius* (Ham.), *Mystus* (*Aorichthys*) *rufescens* (Vinciguerra), *Mystus* (*Mystus*) *bleekeri* (Day), *Rita rita* (Ham.), *Ompok pabo* (Ham.), and *Gagata gagata* (Ham.) in India, Pakistan and Burma; 12 species *viz.*, *Tachysurus nenga* (Ham.), *Mystus* (*Mystus*) *tengara* (Ham.), *Eutropiichthys murius* (Ham.), *Pseudeutropius atherinoides* (Bl.), *Silonia silondia* (Ham.), *Silurus gangelica* (Peters), *Gagata viridescens* (Ham.), *Hara jerdoni* (Day), *Glyptothorax kashmirensis* Hora, *Glyptothorax pectinopterus* Mc Clell., *Glyptosternon stoliczkae* (Day) and *Ailiichthys punctata* Day in India and Pakistan; 4 species *viz.*, *Tachysurus jella* (Day), *Tachysurus platystomus* (Day), *Tachysurus subrostratus* (V.) and *Mystus* (*Mystus*) *keletius* (V.) in India and Ceylon; 6 species *viz.*, *Tachysurus parvipinnis* (Day), *Mystus* (*Mystus*) *armatus* (Day), *Olyra longicaudata* Mc Clell., *Proeutropiichthys taakree* (Sykes), *Gagata itchkea* (Sykes), and *Erethistes pusillus* M & T in India and Burma; 1 species *viz.*, *Tachysurus serratus* in Ceylon and Pakistan; 1 species *viz.*, *Osteogeneiosus sthenocepthalus* in Burma and Ceylon and 9 species *viz.*, *Gagata nangra* (Ham.), *Hara horai* sp. nov., *Laguvia ribeiroi* Hora, *Glyptothorax annandalei* Hora, *Glyptothorax gracile* Gthr., *Glyptothorax horai* Shaw & Shebbeare, *Glyptothorax telchitta* (Ham.), *Euchiloglanis hodgarti* Hora and *Pseudecheneis sulcatus* (Mc Clell.) in India and Nepal. Out of the 42 non-endemic species (including 3 subspecies) of the Indian region occurring beyond the Indian region, 2 species, *viz.*, *Tachysurus crossocheilus* (Blkr.)and *Tachysurus macronotacanthus* (Blkr.) are exclusively marine; 14 species *viz*,. *Batrachocephalus mino* (Ham.), *Ketengus typus* Blkr., *Osteogeneiosus militaris* (L.), *Tachysurus caelatus* V., *Tachysurus dussumieri* (V.), *Tachysurus gagora* (Ham.), *Tachysurus maculatus* (Thunberg), *Tachysurus sagor* (Ham.), *Tachysurus sona* (Ham.), *Tachysurus sumatranus* (Bennett), *Tachysurus thalassinus* Rüpp., *Mystus* (*Mystus*) *gulio* (Ham.), *Plotosus arab* (Forsk.) and *Plotosus canius* Ham., are marine ascending estuaries and tidal waters; 6 species *viz.*, *Mystus* (*Mystus*) *cavasius* (Ham.), *Pseudobagrus brachysoma* Gthr., *Eutropiichthys vacha* (Ham.), *Pangasius pangasius* (Ham.), *Wallago attu* (Schn.) and *Bagarius bagarius* (Ham.) are freshwater descending tidal waters; 2 species *viz.*, *Clarias batrachus* (L.) and *Heteropneustes fossilis* (Bl.) are freshwater with brackish water tolerance and the remaining 18 species (including 2 subspecies) *viz.*, *Amblyceps mangois* (Ham.), *Mystus* (*Mystus*) *vittatus vittatus* (Bl.), *Chaca chaca* (Ham.), *Clarias brachysoma* Gthr., *Ompok bimaculatus* (Bl.), *Ompok canio* (Ham.), *Ompok pabda* (Ham.), *Silurus cochinchinensis cochinchinensis* V., *Batasio tengana* (Ham.), *Laguvia asperus* (Mc Clell.), *Glyptothorax platypogonoides* (Blkr.), *Glyptothorax prashadi* Mukerji, *Glyptothorax sinense* Regan., *Glyptothorax trilineatus* Blyth, *Glyptosternon maculatum* Reg., *Glyptosternon reticulatum* Mc Clell., and *Coraglanis kishinouye* (Kimura) are exclusively freshwater. The distributional pattern of the 42 nonendemic species (including 3 subspecies) occurring beyond the Indian region is as follows : 20 species *viz.*, *Batrachocephalus mino* (Ham.), *Ketengus typus* Blkr., *Osteogeneiosus militaris* (L.), *Tachysurus caelatus* V., *Tachysurus crossocheilus* (Blkr.), *Tachysurus dussumieri* (V.), *Tachysurus macronotacanthus* (Blkr.), *Tachysurus sagor* (Ham.), *Tachysurus sona* (Ham.), *Tachysurus sumatransus* (Benn.), *Tachysurus thalassinus* Rüpp., *Mystus* (*Mystus*) *gulio* (Ham.), *Clarias batrachus* (L.), *Clarias brachysoma* Gthr., *Plotosus arab* (Forsk.), *Plotosus canius* (Ham.), *Pangasius pangasius* (Ham.), *Ompok bimaculatus* (Bl.), *Wallago attu* (Schn.) and *Bagarius bagarius* (Ham.) occur both north and south of the Equator between 35° N. and 26° S. in the latitudinal and longitudinal range of 5° 25′—31° 37′ N., 62° 20′—99° 3′ E. in the Indian region and 35° N.—26° S., 30° 30′ E.—170° W. beyond the Indian region, while the remaining 22 species (including 3 subspecies) are restricted to the north of the Equator between 00° 00′—35° N., in the latitudinal and longitudinal range of 6° 35′ N. 62° 20′—99° 3′ E. in the Indian region and 0° 00′—35′ N., 99°—135° E. beyond the Indian region.

Of the former 20 species occurring both north and south of the Equator, 4 species *viz.*, *Tachysurus dussumieri* (V.), *Tachysurus sona* (Ham.), *Tachysurus* *thalassinus* (Rüpp.) and *Plotosus arab* (Forsk.) extend their range between 12° and 26° south of the Equator and the remaining 16 species are restricted within 10° south of the Equator thus : 3 species *viz.*, *Ketengus typus* Blkr., *Tachysurus crossocheilus* (Blkr.), and *Tachysurus macronotacanthus* (Blkr.) are restricted to India; 1 species *viz.*, *Clarias brachysoma* (Gthr.) is restricted to Ceylon; 1 species, *Batrachocephalus mino* (Ham.) has been recorded from India and Burma; 1 species *Tachysurus sumatranus* (Benn.) occur in India and Ceylon; 2 species *viz.*, *Tachysurus dussumieri* (V.) and *Tachysurus sona* (Ham.) occur in India, Pakistan and Ceylon; 3 species *viz.*, *Tachysurus sagor* (Ham.), *Pangasius pangasius* (Ham.) and *Bagarius bagarius* (Ham.) occur in India, Pakistan and Burma; 1 species *Ompok bimaculatus* (Bl.) occurs in India, Burma and Ceylon; 7 species *viz.*, *Osteogeneiosus militaris* (L.), *Tachysurus caelatus* (V.), *Tachysurus thalassinus* Rüpp., *Mystus* (*Mystus*) *gulio* (Ham.), *Plotosus arab* (Forsk.), *Plotosus canius* (Ham.) and *Wallago attu* (Bl.) occur in India, Pakistan, Burma and Ceylon; 1 species, *Clarias batrachus* (L.) occur in India, Pakistan, Nepal, Burma and Ceylon.

Out of the 22 species (including 3 subspecies) which are restricted to the north of the Equator, 3 species (including 1 subspecies) *viz.*, *Pseudobagrus brachysoma* Gthr., *Glyptothorax conirostre conirostre* (Steind.) and *Glyptosternon maculatum* Regan are restricted to India; 1 species *viz.*, *Laguvia asperus* (Mc Clell.) occurs in Burma; 1 species *viz.*, *Coraglanis kishinouyei* (Kimura) is restricted to Nepal while the remaining 17 species (including 2 subspecies) occur in more than one country of the Indian region. Of these 17 species (including 2 subspecies), 2 species *viz.*, *Amblyceps mangois* (Ham.) and *Glyptosternon reticulatum* Mc Clell. occur in India and Pakistan; 6 species (including 1 subspecies) *viz.*, *Tachysurus gagora* (Ham.), *Silurus cochinchinensis cochinchinensis* V., *Batasio tengana* (Ham.), *Glyptothorax prashadi* Mukherji, *Glyptothorax sinense* Regan and *Glyptothorax trilineatus* Blyth occur in India and Burma; 3 species *viz.*, *Tachysurus maculatus* (Thunberg), *Mystus* (*Mystus*) *cavasius* (Ham.) and *Ompok pabda* (Ham.) occur in India, Pakistan and Burma; 1 species *viz.*, *Tachysurus sona* (Ham.)

occur in India, Pakistan and Ceylon; 1 subspecies *Mystus* (*Mystus*) *vittatus vittatus* (Bl.) occur in India, Pakistan, Burma and Ceylon; 1 species *viz.*, *Ompok canio* (Ham.) occur in India and Nepal; 2 species *viz.*, *Eutropiichthys vacha* (Ham.) and *Chaca chaca* (Ham.) occur in India, Pakistan, Nepal and Burma; and one species *viz.*, *Heteropneustes fossilis* (Bl.) occurs in India, Pakistan, Nepal, Burma and Ceylon.

In the preparation of this volume considerable use has been made of the vast literature on the suborder Siluroidei, reference to which may be made from the generic and specific synonymies and from the "References" given towards the end.

The limits of the area on which the marine species are described in this volume are as that defined in the introduction of the first volume. For the freshwater species, the limits of the area are the political boundaries of India, Pakistan, Nepal, Burma and Ceylon.

Finally, I am very grateful to Dr. M.S. Mani, D.Sc., Dy. Director-in-charge, Zoological Survey of India, for affording the necessary laboratory and library facilities. I am also very thankful to Mr. M.A. S. Menon, Assistant Zoologist, Zoological Survey of India, for kindly going through the manuscript.

K. S. MISRA, D.SC.

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XII. Order CYPRINIFORMES

Supraoccipital separated from frontals by parietals. Parietals distinct or fused with supraoccipital. Upper jaw formed by intermaxillaries and maxillaries or by intermaxillaries alone when maxillaries are reduced. Orbitosphenoid always present. No basisphenoid. Opercle complete or incomplete with suboperculum and operculum. 4 anterior vertebrae modified or co-ossified with their ribs and neural arch forming a chain of bones, the Weberian ossicles, connecting the air bladder with ear. Largest otolith lagena or utriculus, never sacculus. Pectoral arch suspended from skull. Mesocoracoid usually present. Symplectic present or absent. Bone with bone cells. Fin rays articulated; fins without spines. Dorsal, pectoral and anal with a spine, or dorsal often with 2-3 pungent spines. Dorsal present or absent. Pectorals normal or vertical. Pelvics abdominal when present, or absent. Adipose fin present or absent. Anal short, moderate or long. Lateral line present, often incomplete. Skin naked or with cycloid scales, or with bony scutes and plates.

Upper Cretaceous to Recent.

CYPRINIFORMES comprises 2 divisions, SILURI and CYPRINI.

Key to divisions of order CYPRINIFORMES

1. Parietals distinct, symplectic and suborpercle present ; 3rd vertebrae not united with 4th ; skin scaly or naked, never with bony plates ; largest otolith usually lagena	CYPRINI
2. Parietals not distinct, symplectic and subopercle absent ; 3rd and 4th vertebrae united ; skin naked or covered with bony plates ; largest otolith usually utriculus or lagena	SILURI

I. Division SILURI

Parietals usually confluent with supraoccipital; symplectic and subopercle absent. Vertebrae 1-4 and often the 5th ankylosed. Parapophyses co-ossified with centra. Body naked or covered with bony plates. Pineal foramen present as in genera *Tachysurus* and *Plotosus.*

The division SILURI comprises a single suborder *SILUROIDEI.*

x. Suborder *SILUROIDEI*

Parietals fused with supraoccipital. Upper jaw bordered by intermaxillaries; maxillaries rudimentary, bearing a barbel. Symplectic and subopercle absent. Vertebrae 1—5 ankylosed. No epipleurals and epineurals, parapophyses co-ossified with centra. Palate and pterygoid usually toothed. Pharyngeal bones with small conical or villiform teeth. Fin rays articulated, with second dorsal ray and outer pectoral ray modified into spines. Branchiostegals 4—17. Pseudobranchiae absent. Adipose fin often present. 1—4 pairs of barbels usually present. Skin naked or with bony plates. Lagena large; the largest otolith, the utriculus or lagena, the sacculus always small. Pyloric caeca absent. Pineal foramen present in genera *Tachysurus* and *Plotosus,* the latter with ampullae of *Lorenzini,* exclusively a Selachian character. Air bladder large, connected with the alimentary canal by a duct; Weberian apparatus present.

Paleocene to Recent.

The suborder *SILUROIDEI* consists of 2 superfamilies, SILUROIDAE and DIPLOMYSTOIDAE, of which the latter is not represented in the Indian region.

VIII. Superfamily SILUROIDAE

Maxillaries rudimentary, toothless; 5th vertebra suturally united with modified anterior vertebrae. Largest otolith usually the utriculus.

The superfamily SILUROIDAE is represened by 12 families in the Indian region.

Key to families of superfamily SILUROIDAE

1.	Second rayed dorsal or procurrent caudo-dorsal present	3
2.	Second rayed dorsal or procurrent caudo-dorsal absent	5
3.	Two short anal fins, 2nd united with caudal; head broad, depressed ..	CHACIDAE
4.	One long anal fin united with caudal ; head neither broad nor depressed ..	PLOTOSIDAE
5.	First dorsal very long, 62—95 rays ..	CLARIIDAE
6.	First dorsal short, 2—22 rays (except genera *Ailia* and *Ailiichthys* having no dorsal)	7
7.	Anal long, 24—93 rays ..	9
8.	Anal short, 6—28 rays (except genus *Pseudobagrus* with 20—28 rays) ..	13
9.	Adipose dorsal absent ; first dorsal spineless	11
10.	Adipose dorsal present ; first dorsal with spine (except genus *Ailia* having no dorsal)	SCHILBEIDAE
11.	One or 2 pairs of barbels ; nasal barbels absent	SILURIDAE
12.	Four pairs of barbels ; nasal barbels present	HETEROPNEUSTIDAE
13.	Nostrils separated by a valve ; 1 or 3 pairs of barbels	TACHYSURIDAE
14.	Nostrils separated by a barbel or a lobe ; 3-4 pairs of barbels or 6 pairs of barbel-like processes	15
15.	Dorsal fin spineless ..	OLYRIDAE
16.	Dorsal fin with spine	17
17.	Gill membranes united with isthmus (except genus *Bagarius* with free gill membranes)	19
18.	Gill membranes not united with isthmus	21
19.	Nostrils close together or slightly wide apart	SISORIDAE
20.	Nostrils well separated	AKYSIDAE

21. Palate edentulous ; dorsal and pectoral spines weak	AMBLYCEPIDAE
22. Palate toothed ; dorsal and pectoral spines strong	BAGRIDAE

XLVII. Family AKYSIDAE

Body elongate, flattended ventrally to pelvic base. Head depressed, with or without prominent longitudinal ridges, covered with skin. Eyes small, superior, subcutaneous. Nostrils remote from each other, anterior tubular, posterior with a nasal barbel. 4 pairs of barbels. Mouth transverse or crescentric. Teeth villiform, in band in jaws; palate edenulous. A median longitudinal groove on head. Branchiostegals 6. Gill openings narrow or moderate, extending superiorly to pectoral base or wider extending above it. A short rayed dorsal with a pungent spine sheathed in thick skin; adipose dorsal present or absent. Pectorals with thick skin. Pelvics horizontal, with 6 rays. Anal short. Caudal truncate or deeply emarginate. Lateral line. Skin granulated or tuberculated. Air bladder thin walled.

The family AKYSIDAE is represented by a single genus in the Indian region.

127. Genus **Akysis** Bleeker

1858. *Akysis* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, p. 234 (type, *Pimelodus variegatus* Blkr., orthotypic).

Body elongate, flattened ventrally to pelvic base. Head depressed, broad, covered with skin. Eyes small, superior, subcutaneous. Nostrils widely separated, anterior tubular, posterior with the nasal barbel. 4 pairs of barbels. Mouth transverse; lips fleshy, papillated. Teeth villiform in jaws; palate edentulous. Median longitudinal groove on head extending to base of occipital process; occipital process not reaching basal bone of dorsal. Gill openings moderate, extending dorsally above the base of pectorals ; gill-membranes confluent with isthmus. Short dorsal with a pungent spine covered with thick skin; an adipose dorsal. Pectorals horizontal, with a strong osseous spine furrowed longitudinally, serrated or non-serrated, covered with thick skin, prolonged into a cartilaginous filament. Pelvics horizontal, with 6 rays. Anal short.

Caudal emarginate. Skin with tubercles arranged in longitudinal rows. Air bladder with thin walls Branchiostegals 6.

Distribution.—Burma, Thailand, Sumatra, Java, Borneo.

The genus **Akysis** is represented by two species in the Indian region.

Key to species of genus Akysis Bleeker

1. Nasal barbel more than 1/2 length of head ; rayed dorsal origin nearer to adipose dorsal origin than to snout end; anal rays 11 *A. prashadi*
2. Nasal barbel 1/2 length of head; rayed dorsal origin midway between adipose dorsal origin and snout end ; anal rays 9 *A. pictus*

278. Akysis pictus Günther

1883. *Akysis pictus* Günther, *Ann. Mag. nat. Hist.*, (5)511, p.138 (type locality : Tenasserim).

1929. *Akysis pictus* Prashad & Mukerji, *Rec. Indian Mus.*, 31, p.181.

1936. *Akysis pictus* Hora, *Rec. Indian Mus.*, **38**, p. 201.

B. 6; D. 1/6/0; P. 1/7; V. 6; A. 9.

Body elongate, with anterior portion flattened. Head depressed, broader than long. Snout 2.0 in postorbital part of head. Eyes superior, subcutaneous minute, twice as far from the gill opening as from the end of snout. Mouth transverse, upper jaw slightly longer; lower labial folds interrupted in the middle. Maxillary barbels reaching origin of rayed dorsal fin, outer mandibulars to pectoral base, inner mandibulars shorter, nasals, half as long as head. Teeth villiform, in band in jaws, palate edentulous. Rayed dorsal with a strong spine grooved along its upper surface origin midway between snout end and adipose dorsal origin. Pectorals horizontal, extending a little beyond rayed dorsal origin, with an entire strong spine grooved along its upper surface. Pelvics reaching vent but not reaching anal. Anal origin nearer to base of caudal than to pectoral base. Caudal emarginate. Lateral line. Skin tubercular.

Head greyish with minute black spots; body anteriorly black; posterior portion with an irregular black band running along the middle of body and tail; a black band covering dorsal fin except its front corner and upper edge; caudal and pectorals banded.

It attains 45 mm. in length; freshwater.

Distribution.—Tenasserim, Burma.

279. **Akysis prashadi** Hora

(Pl. I, figs. 1,2)

1929. *Akysis variegatus* sub sp. *variegatus* Prashad & Mukerji, *Rec. Indian Mus.*, **31**., p. 180. pl. 8; figs. 1, 2 (type-locality: shallower parts of the Indawgyi lake along the S. W. shore and from small rocky streams round about Kamaing Myitkyina Dt.).

1936. *Akysis prashadi* Hora, *Rec. Indian Mus.*, **38**, p. 200, text-figs. 1,2 (Indawgyi lake; Kamaing; type in the Zoological Survey of India)

B. 6; D.3/5/0; P. 108; V. 6; A. 11; C. 16.

Body elongate, with anterior portion flattened; dorsal profile arched, ventral profile straight and horizontal. Head depressed; width considerably greater than its length, height 2/3 in adult, 1/2 in young of its length; head length 5·0; depth 5·0 in total length (4·4 and 4.4 in standard length). Snout prominent, 2·0—2·3 in head, 3·0 in post-orbital part of head. Eyes superior, subcutaneous, in the anterior third of head, 12·0 in head, 4·6—6·0 in snout, 4·0—4·6 in interorbital. Mouth transverse, 2·1 in width of head, upper jaw slightly longer; lips fleshy, papillated; lower labial groove widely interrupted in the middle. Maxillary and outer mandibular barbels reaching middle of pectoral, the inner mandibulars to pectoral base, the nasals beyond middle of head and 2·0 in maxillary barbel. Teeth villiform, in band in jaws; palate edentulous. Two broad median fontanels on head, the posterior much smaller than the anterior and terminating near the base of occipital process. Occipital process 1·5 times as long as broad at its base, not reaching basal bone of dorsal. Rayed dorsal 1·2 in head, with a moderately strong spine, 1·3 in head and grooved along its upper surface; origin nearer to adipose dorsal origin than to snout end, 4·0 eye diameters behind head; adipose dorsal long, low, its base 1·7 times rayed dorsal base; origin 4·0 eye diameters behind last dorsal ray; interdorsal 3·0 in adipose dorsal base. Pectorals horizontal, not quite reaching pelvics and extending to last dorsal ray, 1·1 times head, with an entire strong spine grooved along the upper surface and 1·4 in head. Pelvics horizontal, not reaching anal, 1·7 in head; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin 2·0 eye diameters before middle of adipose dorsal base. Caudal emarginate, lower lobe slightly longer, equal to head, 5·0 in total length; least height of caudal peduncle 2·0—2·2 in its length. Lateral line.

Skin covered with roundish tubercles arranged in 5 longitudinal rows. Head grey, speckled with irregular dark marks; body black before pelvics and behind pelvics, the latter patch being variegated and ending at the caudal base as a broad black mark; the ventral surface speckled with irregular black mark; proximal part of dorsal fin and major part of pectoral and adipose dorsal fins black; pelvics, anal and caudal streaked with black; barbels variegated with black.

It attains 49 mm. in length; freshwater.

Distribution.—Indawgyi, Kamaing, Myitkyina District, Upper Burma.

XLVIII. Family AMBLYCEPIDAE

Body elongate, subcylindrical. Head broad, depressed, covered with skin. Eyes small, superior, subcutaneous. Nostrils close together or wide apart, posterior with nasal barbels. 4 pairs of barbels. Mouth terminal, transverse, wide. Teeth villiform, in band in jaws; palate edentulous. Gill openings wide; gill membranes free from isthmus. A cup-like depression below opercular lap and above base of pectoral spine, probably associated with respiratory function, present or absent. Rayed dorsal with a weak concealed spine; adipose dorsal. Pectorals with a weak concealed spine. Pelvics with 6-7 rays. Anal short, with 9—13 rays. Caudal forked or cut square. No lateral line. Skin smooth. Air bladder with thick walls, enclosed in bone. Branchiostegals 12.

The family AMBLYCEPIDAE is represented by a single genus in the Indian region.

128. Genus **Amblyceps** Blyth

1958. *Amblyceps* Blyth, *J. As. Soc. Bengal*, **27**, p. 281 (type, *A. caecutiens* Blyth, orthotypic).

Body elongate, subcylindrical, compressed behind pelvics. Head broad, depressed, covered with skin, Snout subtruncate or spatulate. Eyes small, superior, subcutaneous. Nostrils close together, the posterior with nasal barbel. 4 pairs of barbels. Mouth terminal, transverse, wide, lower or the upper jaw longer. Teeth villiform, in band in jaws; none on palate. Gill openings wide; gill membranes free from isthmus. A cup-like depression below opercular flap and above base of pectoral spine, probably associated with respiratory function. Rayed dorsal with a weak, concealed spine; an adipose dorsal confluent or non-confluent with caudal. Pectorals with a concealed spine. Pelvics with 6-7 rays. Anal short, 9—13 rays. Caudal deeply forked or cut square. Lateral line absent. Air bladder enclosed in bone. Branchiostegals 12.

Distribution.—India, Pakistan, Bangladesh, Nepal, Burma, Thailand.

The genus **Amblyceps** is represented by two species in the Indian region.

Key to species of genus **Amblyceps** Blyth

1. Snout subtruncate ; lower jaw longer ; caudal deeply forked ; pelvic origin 1/2 snout length behind last dorsal ray ; least height of caudal peduncle 1·2—1·6 in its length; adipose dorsal non-confluent with caudal .. . *A. mangois*

2. Snout spatulate ; upper jaw long ; caudal cut square ; pelvic origin head length behind last dorsal ray ; least height of caudal peduncle 1.9 in its length; adipose dorsal confluent with caudal *A. murray-stuarti*

280. **Amblyceps mangois** (Hamilton)

1822 *Pimelodus mangois* Hamilton, *Fish. Ganges.*, pp. 199, 379 (type locality : tanks of northern Bihar; Kosi river at Nathpur).

1858. *Amblyceps caecutiens* Blyth, *J. As. Soc. Bengal*, **27**, p. 282 (type locality : Moulmein; Pegu).

1860. *Amblyceps tenuispinis* Blyth, *J. As. Soc. Bengal*, **29**, p. 153 (type locality : Ghazipur).

1864. *Amblyceps caecutiens* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 190 (Moulmein, 3" long).

1864. *Amblyceps tenuispinis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 190 (Ghazipur, 2" long).

1864. *Amblyceps mangois* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 190 (Northern Bihar).

1871. *Akysis kurzii* Day, *Proc. zool. Soc. Lond.*, p. 703. (type locality : Tenasserim, Burma).

1877. *Amblyceps mangois* Day, *Fish. India*, p. 490, pl. 102, fig. 6; pl. 115, fig. 1 (Kangra; Darjeeling; the Jumna; Moulmein; Pegu).

1889. *Amblyceps mangois* Day, *Fauna Brit. India*, Fish., **1**, p. 123, fig. 52.

1890. *Amblyceps mangois* Vinciguerra, *Pesci di Birmania*, pp. 28, 68 (Meetan : Tenasserim).

1913. *Amblyceps mangois* Chaudhuri, *Rec. Indian Mus.*, **8**, p. 252.

1933. *Amblyceps mangois* Hora, *Rec. Indian Mus.*, **35**, p. 616 (Kangra; Gazipore; Siliguri; Sevoke rivers of Tarai Duars; Abor hills; Manipur Valley; tributaries of Mali Hka river).

1933. *Amblyceps mangois* Mukerji, *J. Bombay nat. Hist. Soc.*, **36**, p. 819 (tributory streams of the Mali Hka, Myitkyina Dt., Upper Burma).

1934. *Amblyceps mangois* Hora & Mukerji, *Rec. Indian Mus.*, **36**, p. 224 (Pegu Yomas).

1936. *Amblyceps mangois* Hora & Mukerji, *Rec. Indian Mus.*, **38**, p. 137 (the Song and Suswa rivers, Dehra Dun).

1937. *Amblyceps mangois* Hora, *Rec. Indian Mus.*, **39**, p. 339 (the Naudhaur and Kalaunia rivers).

1937. *Amblyceps mangois* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, p. 95 (rivers of Duars & Terai; Kumaon, Himalayas).

1938. *Amblyceps mangois* Hora, *Rec. Indian Mus.*, **40**, p. 178 (Rajmahal hills, Santal Parganas).

1939. *Amblyceps mangois* Das, *Rec. Indian Mus.*, **41**, p. 448 (tributaries of Barakar River & Siwane River).

1940. *Amblyceps mangois* Hora, *Rec. Indian Mus.*, **42**, p. 374 (Dt. Hazaribagh; Mahanadi).

1941. *Amblyceps mangois* Hora & Nair, *Rec. Indian Mus.*, **43**, p. 367 (Timarni nullah, a branch of the Anjal river, Hoshangabad Dt.)

1941. *Amblyceps mangois* Hora & Gupta, *J. roy. As. Soc. Bengal, Sci.*, **6**, p. 80 (Kalimpong, Duars & Siliguri Terai).

1945. *Amblyceps mangois* Smith, *U. S. nat. Mus. Bull.*, **188**, p. 375 (Pak Jong, mountain district in east central Siam).

1949. *Amblyceps mangois* Hora, *J. zool. Soc. India*, **1** (1) p.2 (Rihand dam, Pipiri, Dt. Mirzapur).

Vernacular names.—INDIA : *Billi*, Hindi; *Billi*, *Sudaal*, Punjab. PAKISTAN : *Billi*, *Sudaal*. BURMA : *Nga Yan*, *Uyan*.

B. 12; D. 1/6/0; P. 1/7; V. 1/5; A. 2-3/7-9; C. 19.

Body elongate, subcylindrical, compressed behind pelvics. Head covered with soft skin, broad, depressed, 6·2; depth 7·2—9·0 in total length (5·0 and 5·6—7·2 in standard length). Snout broad, subtruncate, 3·0 in head. Eyes small, superior, subcutaneous in the anterior half of head. Nostrils close together, posterior one with a barbel. Mouth anterior, transverse, wide; lower jaw slightly longer, lips thick, fimbriated. Maxillary barbels reaching end or middle of pectoral spine, nasals equalling head, outer mandibulars shorter, inner mandibulars equalling nasal barbels. Teeth villiform, in band in jaws; none on palate. No corrugations between pectoral and pelvic bases. Gill openings wide extending to ventral surface; gill membranes free from isthmus, deeply notched medianly. Rayed dorsal equal to head, with a concealed spine half as high as dorsal fin; origin nearer to low adipose dorsal origin than to snout end or nearer to snout end than to adipose dorsal origin; adipose dorsabase 1·2—2·5 times rayed dorsal base, extending nearlly a snout length behind last anal ray; interdorsal 1·8—2·0 in adipose dorsal base. Pectorals with a concealed spine, low; equal to head, not reaching pelvics. Pelvics not reaching anal, 1·5 in head; origin 1/2 snout length behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·8 in head; base 1·2 times rayed dorsal base; origin below middle of adipose dorsal base, or a snout length before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, upper lobe the longer, 1·5 times head, 4·1 in total length; least height of caudal peduncle 1·0—1·6 in its length. No lateral line.

Skin smooth. Olive brown, lighter below; often with a dark lateral band, branching towards caudal and anal bases.

It attains 127 mm. in length; freshwater.

Distribution.—India : Kangra, Punjab; the Jammu, the Song and Suswa rivers, Nandheer and Kalaunia rivers, Kumaon, Himalayas, Ghazipur, the Rihand river, U.P.; the Anjal river, M.P., Hazaribagh, Rajmahal hills, Barakar and Siwane rivers, northern Bihar, the Kosi river, Bihar; Siliguri, rivers of Duars and Terai, Kalimpong, Darjeeling, Sevoke river, W. Bengal; Manipur valley, Abor hills, Assam. Pakistan. Bangladesh. Nepal : the Kosi river. Burma : Moulmein, Meetan, Tenasserim, tributaries of Mali Hka river, Myitkyina Dt., Upper Burma.—Thailand : Pakjong, Nagon Sritamarat, Chantabun estuary, Trang. in the latitudinal and longitudinal range of 16°—31° 37′ N., 74°—99° E. in the Indian region and 8°30′—12°30′ N. 100°—103° E. beyond Indian region.

281. **Amblyceps murray-stuarti** Chaudhuri

(Pl. I, figs. 3-5)

1919. *Amblyceps murray-stuarti* Chaudhuri, *Rec. Indian Mus.*, **16**, pp. 271—275, pl. 22, figs. 1, 1a, 1b (type locality: mountain stream in the Putao Plains on the northern frontier of Upper Burma in the month of February, 1918; type is in the Zoological Survey of India).

1941. *Amblyceps mangois* (*nec* Hamilton) Hora & Misra, *J. Bombay nat. Hist. Soc.*, **42**, pp. 480—482, pl. 1, figs. 4,5 (Kora, 2 specimens; Hai Bum, 4 specimens, Upper Burma).

B. 12; D. 1/6/0; P. 1/10; V. 1/6; A. 13; C. 20.

Body elongate, cylindrical, compressed behind pelvics. Head with soft skin, depressed, broader than high, 5·7; depth 7·7 in total length (5·0 and 6·7 in standard length). Snout spatulate, 3·0 in head. Eyes small, superior, subcutaneous, in the anterior half of head; interorbital 5·0 in head. Nostrils close together, posterior one nearly reaching front border of eye and with a nasal barbel. Mouth wide, anterior, transverse, upper jaw longer; gape of mouth 2·0 in width of head; lips fringed. Maxillary barbels broad based, as long as head, reaching pectoral base, outer mandibulars 2/3 the length of head, equal to nasals, inner mandibulars 2·0 in head. Teeth villiform, in band in jaws; the band in upper jaw broad, crescentic, in lower jaw narrow, straight. Gill openings wide, extending ventrally; gill membranes free from isthmus, notched medianly. About 12-13 faint, transverse corrugations between pelvic and pectoral bases. Rayed dorsal 2·8 in head, with a concealed spine; origin nearer to snout end than to adipose dorsal origin; adipose dorsal continuous with caudal, 6·0 times rayed dorsal base; interdorsal 1·6 in adipose dorsal base. Pectorals low, 1·6 in head, not reaching pelvics, with a concealed spine. Pelvics not reaching anal, 2·0 in head; origin nearly a head length behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 2·8 in head; origin a snout length behind adipose dorsal origin, its base 2·3 times rayed dorsal base, nearer to pelvic origin than to caudal base. Caudal cut square, 1·5 in head, 8·5 in total length; least height of caudal peduncle, 1·9 in its length. No lateral line.

Skin smooth. Brownish black, lighter below; maxillary barbels whitish, nasal and inner mandibular barbels dusky white.

It attains 98 mm. in length; freshwater.

Distribution.—Mountain stream in the Putao plains on the northern frontier of Upper Burma; Kora, Hai Bum, Upper Burma.

XLIX. Family TACHYSURIDAE

Body elongate, subterete, compressed posteriorly. Head depressed, osseous, covered or not covered with skin. Eyes with or without free orbital margins. Nostrils close together, the posterior with a valve. 3 or 1 or 2 pairs of rudimentary barbels. Mouth terminal, inferior, small or large, transverse or crescentic, upper or lower jaw longer. Teeth villiform or conical or compressed or tricuspid in one or more rows in both jaws; palatine teeth present or absent; when present villiform or conical or granular, in longitudinal band or in 2 widely separate patches. A median longitudinal groove on head. Occipital process touching basal bone of dorsal. Branchiostegals 5-6. Gill openings wide; gill membranes united, free, or attached to isthmus. Rayed dorsal with a spine; an adipose dorsal. Pectorals low, with a strong spine, serrated on both edges. Pelvics with 6 rays, behind last dorsal ray. Anal moderate, 14—28 rays. Caudal forked. Lateral line. Skin smooth; occipital, scapular and humero-cubital regions rugose. Air bladder not enclosed in bone. Auxillary pore.

Lower Eocene to recent.

The family TACHYSURIDAE is represented by 5 genera.

Key to the genera of family TACHYSURIDAE

1. 2 or 4 barbels	3
2. 6 barbels	5
3. Two osseous maxillary barbels	**Osteogeneiosus**
4. Two small mandibulary barbels, (maxillary barbels vestigial)	**Batrachocephalus**
5. Palate toothed	**Tachysurus**
6. Palate edentulous	7
7. Mouth wide, extending beyond anterior border of eye	**Ketengus**
8. Mouth narrow, ending before anterior border of eye	**Hemipimelodus**

129. Genus **Batrachocephalus** Bleeker

1846. *Batrachocephalus* Bleeker, *Nat. & Gen. Arch. Ned. Ind.*, 2(3), p. 176 (type *B. micropogan* Blkr., orthotypic).

Body elongate, subterete, posteriorly, compressed. Head broad, depressed, with naked shield above. Eyes lateral, with free orbital margins. Nostrils close together, posterior with a valve, one or two pairs of rudimentary mental barbels. Mouth anterior, lower jaw longer, cleft of mouth oblique. Teeth conical in both jaws, with interspace between outer and inner row; palatine teeth conical, in a broad longitudinal band. A median longitudinal groove on head. Occipital process reaching basal bone of dorsal. Branchiostegals 5. Gill openings wide; gill membranes united, free from isthmus. Rayed dorsal with a strong spine serrated on both edges. An adipose dorsal. Pectorals low, with a spine serrated on both edges. Pelvics with 6 rays, entirely behind last dorsal ray. Anal with 21 rays. Caudal forked. Lateral line. Skin smooth; occipital, cubitohumeral and scapular regions rugose. Air bladder not enclosed in bone. An auxillary pore.

Distribution.—India, Burma, Sumatra, Java, Borneo.

282. **Batrachocephalus mino** (Hamilton)

1822. *Ageneiosus mino* Hamilton, *Fish. Ganges,* p. 159 (type locality : Ganges river).

1858. *Batrachocephalus micropogan* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, p. 119 (type locality : Java)

1864. *Batrachocephalus mino* Gūnther, *Cat. Fish. Brit. Mus.*, **5**, p. 182 (Ganges; rivers of Java and Sumatra)

1877. *Batrachocephalus mino* Day, *Fish. India,* p. 468, pl. 108, fig. 1.

1889. *Batrachocephalus mino* Day, *Fauna Brit. India,* Fish. **1**, p. 192, fig. 70 (seas, estuaries and tidal rivers of India and Burma to the Malay Archipelago).

1913. *Batrachocephalus mino* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 332. fig. 143 (Java, Sumatra, Borneo).

1953. *Batrachocephalus mino* Munro, *Mar. Freshwater Fish. Ceylon,* p. 52 (seas, estuaries and tidal rivers).

B. 5; D. 1/7/0; P. 1/7-9; V. 6; A. 19-21 (5/14—16); C-15.

Body elongate. Head broad, depressed, width equalling its length behind middle of eyes, 4·5; depth 6·0 in total length (3·5 and 4·8 in standard length). Snout obtuse, 4·8 in head. Eyes in the anterior half of head, with free orbital margins, above angle of mouth, 4·0 in head, 0·5 in snout. 1·5 in interorbital. Mouth wide, arched, cleft of mouth reaching to midorbit; lower jaw prominent. Outer and inner mandibular barbels minute. Teeth conical, in 4 or 5 series, in crescentic band in jaws; vomer, edentulous; palatines with a longitudinal band of conical teeth. Occipital process, lineated in roughened lines, longer than wide at its base, extending to basal bone of dorsal. Dorsal 1—3 in head, with a spine serrated on both edges; origin nearer to snout end than to adipose dorsal origin; adipose dorsal origin an eye diameter before last anal ray; its base 1—5 in rayed dorsal base; interdorsal 4·5 times adipose dorsal base. Pectorals not reaching pelvics, 1.1 in head, with a spine longer than dorsal spine, denticulated on both edges. Pelvics 1·8 in head, not reaching anal. Anal origin 1·5 eye diameters before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes pointed, upper lobe the longer, 1·1 in head, 5·0 in total length; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Silvery, darkest along the back and upper lobe of caudal fin.

It attains 250 mm. in length and has been recorded from seas, estuaries and tidal rivers.

Distribution.—India : Ganges, W. Bengal. Bangladesh. Burma. Sumatra, Java, Borneo; in the latitudinal and longitudinal range of 22° 56′—23° 45′ N., 88° 26′—90° 26′ E. in the Indian region and 2° N.—6° 12′ S., 102°—113° 30′ E. beyond Indian region.

130. Genus **Hemipimelodus** Bleeker

1858. *Hemipimelodus* Bleeker, *Ichth. Arch. Ind. Prodr.*, 1, *Siluri*, p. 236 (type, *Pimelodus borneensis* Blkr., orthotypic).

1898. *Pachyula* Ogilby, *Linn. Soc. New South Wales*, 23, p. 33 (type, *Hemipimelodus crassilabris* Ramsay & Ogilby).

Body elongate, subterete, posteriorly compressed. Head depressed, with head shield, covered or not covered with skin. Eyes with or without free orbital margins Nostrils close together, the posterior with a valve. 3 pairs of slender barbels. Mouth transverse, small or moderate; upper jaw longer. Teeth villiform, in band in jaws; palate edentulous. A median longitudinal groove on head. Occipital process extending to basal bone of dorsal. Branchiostegals 5—6. Gill openings wide; gill membranes united, attached to isthmus. Rayed dorsal with a spine serrated internally only or on both edges; an adipose dorsal. Pelvics with 6 rays, entirely behind last dorsal ray. Anal with 15—20 rays. Caudal deeply forked. Lateral line. Skin smooth; occipital, scapular and humero-cubital regions roughened. An auxillary pore. Air bladder not enclosed in bone.

Distribution.—India, Bangladesh, Burma, Thailand, Sumatra, Java, Borneo, N. & S. New Guinea.

The genus **Hemipimelodus** is represented by two species in the Indian region.

Key to species of genus **Hemipimelodus** Bleeker

1. Median longitudinal groove reaching base of occipital process; occipital process as broad as long at its base; dorsal spine strong; eye 4·5—5·0 in head ; maxillary barbel shorter than head	*H. jatius*
2. Median longitudinal groove not reaching base of occipital process; occipital process longer than wide at its base; dorsal spine weak and thin; eye 7·0 in head; maxillary barbel as long as head	*H. tenuispinis*

283. **Hemipimelodus jatius** (Hamilton)

(Text-fig. 1)

1822. *Pimelodus jatius* Hamilton, *Fish. Ganges*, pp. 171, 376 (type locality : estuaries of Bengal) (palate edentulous).

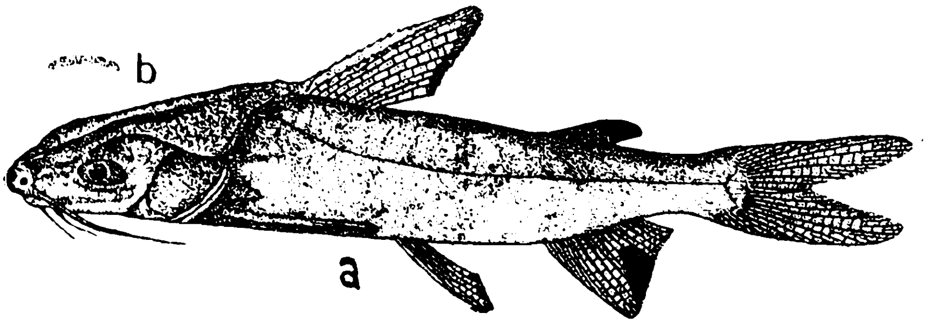
1877. *Arius jatius* Day, *Fish. India*, p. 466, pl. 106, fig. 4 (specimen figured has no teeth on palate).

1889. *Arius jatius* Day, *Fauna Brit. India*, Fish., **1**., p. 186 (estuaries and rivers of Bengal and Burma).

1890. *Arius jatius* Vinciguerra, *Pesci di Birmania*, p. 114 (Mandalay; Bhamo).

1929. *Arius jatius* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 359 (Trivandrum).

1949. *Hemipimelodus jatius* Hora, *Rec. Indian Mus.*, **46**, p. 68.



TEXT-FIG. 1.—*Hemipimelodus jatius* (Ham.) (*a*) Lateral view (*b*) Dentition (After F. Day)

Vernacular names.—INDIA : *Mooken—theydoo*, Malayalam. BURMA : *Nga-Youn. Nga-Yeh.*

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 18—20 (5/13—15); C. 17.

Body elongate, subterete, posteriorly compressed. Head depressed, height nearly equalling its width, the latter equalling head length minus snout, 4·2; depth 5·2 in the total length (3·3 and 4·7 in standard length). Opercle wider than high. Snout 3·5 in head. Eyes 4·2—5·0 in head, 1·5 in snout, 1·7—2·0 in interorbital. Mouth inferior, upper jaw longer, gape equalling 1/3 length of head. Median longitudinal groove narrow, reaching base of occipital process. Occipital process keeled, as wide at its base as long, reaching the narrow V-shaped basal bone of dorsal. Maxillary barbels shorter than head, outer mandibulars reaching gill openings. Premaxillary band of teeth, villiform, 6 times as long as broad; palate edentulous (in a specimen measuring 125 mm. in length) Rayed dorsal as high or slightly higher than body, with a strong spine as long as head minus snout, serrated on both edges; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 4/5 of rayed dorsal base. Pectorals low, 1·3 in head, reaching pelvics, with a spine as long as dorsal spine, serrated externally and denticulated internally. Pelvics 1·8 in head, nearly reaching anal; origin half an eye diameter behind last dorsal ray and nearly equidistant between anal origin and pectoral base. Anal 1·9 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head, 5·0 in total length; least height of caudal peduncle 1·8 in its length. Lateral line bifurcating at caudal base.

Skin smooth; posterior part of head sparingly granulated, granulations becoming denser on occipital process. Dark bluish above; lighter on sides and below; deep black spot on upper half of adipose dorsal.

It attains 305 mm. or more in length; has been found in estuaries and rivers, ascending far above tidal reach.

Distribution.—India : rivers and estuaries of W. Bengal. Bangladesh: rivers and estuaries. Burma : Mandalay, Bhamo.

284. Hemipimelodus tenuispinis (Day)

1877. *Arius tenuispinis* Day, *Fish. India*, p. 466, pl. 107. fig. 5 (head) (type locality : Bombay).

1889. *Arius tenuispinis* Day, *Fauna Brit. India*, Fish., 1, p. 187.

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 18 (5/13); C. 17.

Body elongate, subterete, posteriorly compressed. Head depressed, width equalling head minus snout, 3·5; depth 5·5 in total length (2·7 and 4·6 in standard length); snout 2·5 in head. Eyes 6·5—7·0 in head, 2·5 in snout, 3·5 in interorbital. Mouth inferior, upper jaw longer, gape equalling 1/3 of head. Median longitudinal groove narrow, not reaching base of occipital process. Occipital process keeled, longer than wide at its base, reaching narrow V-shaped basal bone of dorsal. Maxillary barbels reaching end of head, outer mandibulars shorter. Premaxillary band of teeth villiform; palate edentulous (in a specimen measuring 360 mm. in length). Rayed dorsal with a very weak thin spine, nearly equal to head minus snout, serrated internally, adipose dorsal base 1/2 rayed dorsal base. Pectorals low, with a strong spine equal to dorsal spine, roughened anteriorly, serrated posteriorly. Pelvics reaching anal. Anal opposite adipose dorsal. Caudal forked, 4·5 in total length. Lateral line.

Skin smooth, a few granulations on head and occipital process. Silvery above, lighter below.

It attains at least 360 mm. in length; has been found in seas.

Distribution.—Bombay, India.

131. Genus Ketengus Bleeker

1847. *Ketengus* Bleeker, *Verh. Bat. Gen.*, 21, p. 9 (type *K. typus* Blkr., orthotypic).

Body elongate, subterete, posteriorly compressed. Head osseous superiorly, depressed. Eyes with free circular margins. Nostrils close together, the posterior with a valve. 3 pairs of barbels. Mouth, inferior, upper jaw the longer, cleft of mouth deep. A single row of compressed, subtruncate or tricuspid teeth in jaws, palate edentulous. A narrow, deep, longitudinal groove on head. Occipital process touching basal bone of dorsal. Gill openings wide; gill membranes broadly united with isthmus. Branchiostegals 5. Rayed dorsal with a strong spine serrated on both edges; an adipose dorsal. Pectorals with a strong spine serrated on both edges. Pelvics with 6 rays entirely behind last dorsal ray. Anal moderate, with 19—20 rays. Caudal forked. Lateral line. Skin smooth. Occipital, scapular and humero-cubital regions rugose. Air bladder not enclosed in bone. An auxillary pore.

Distribution.—India : Andamans.—Penang, Thailand, Borneo, Java, Sumatra, Madura.

285. **Ketengus typus** Bleeker

1847. *Ketengus typus* Bleeker, *Verh. Bat. Gen.*, **21**, p. 9 (type-locality : Java).

1850. *Pimelodus pectinidens* Cantor, *J. As. Soc. Bengal*, **18**, p. 1243.

1877. *Ketengus typus* Day, *Fish. India*, p. 468, pl. 108, fig. 2 (Andamans to Malay Archipelago ; specimen figured was from Port Blair).

1889. *Ketengus typus* Day, *Fauna Brit. India*, Fish., **1**, 189.

1913. *Ketengus typus* Weber & de Beaufort, *Fish. Indo-Austral. Archipelago*, **2**, p. 317 (Java, Madura, Sumatra. Borneo).

5; D. 1/7/0; P. 1/7—8; V. 6; A. 19—20 (5—6/14); C. 15.

Body elongate. Head osseous superiorly, longer than broad, width equalling its length minus snout, 4·7—5·5; depth 5·7—5·9 in total length (3·7—4·5 and 4·5—5·0 in standard length). Snout obtuse, 5·0 in head. Eyes in the anterior half of head, with a free orbital margin, 5·2 in head, 1·2 in snout, 2·5 in inter-orbital. Mouth wide, extending beyond eye; width of gape of mouth equalling length of head minus snout; upper jaw the longer. Maxillary and outer mandibular barbels equal to eye diameter, inner mandibulars shorter than eye diameter. A deep, median, longitudinal groove on head, not extending to base of occipital process. Occipital process longer than broad at its base, extending to the crescentic basal bone to dorsal. A single row of compressed, small, incisor—like teeth, tricuspid or subtruncate in jaws; palate edentulous. Dorsal equal to head, with a strong spine serrated on both edges; origin nearer to snout end than to adipose dorsal origin, 1·5 eye diameters behind head; adipose dorsal base equal to soft dorsal base and 3·8 in interdorsal; origin one and half eye diameters before last anal ray. Pectorals 1·1 in head, not reaching pelvics, with a strong spine denticulated on both edges. Pelvics 1·8 in head, not reaching anal; origin half an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal moderate; origin 3·0 eye diameters behind pelvic origin; its base 5·5 in standard length. Caudal forked, lobes pointed, upper lobe the longer, 1·1 in head, 5·1—6·0 in total length; least height of caudal peduncle 1·8 in its length.

Darkish above becoming silvery below; fins yellowish.

It attains 240 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—Andamans, India.—Penang, Thailand, Sumatra, Java, Borneo, in the latitudinal and longitudinal range of 11° 41 N., 92° 45′ E. in India and 8° 30′ N.—6° 12′ S., 100°—114° 30′ E. beyond Indian region.

132. Genus **Osteogeneiosus** Bleeker

1846. *Osteogeneiosus* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, 3, pt. 2, p. 173 (type, *O. macrocephalus* Blkr. =*Silurus militaris* L., virtually monotypic).

1849. *Osteogenius* Cantor, *J. As. Soc. Bengal*, **18**, p. 1241 (type, *Silurus militaris* L.).

1864. *Osteogeniosus* Günther, *Cat. Fish. Brit. Mus.* **5**, p. 181, (type, *Silurus militaris* L.).

Body elongate, subterete, posteriorly compressed. Head strongly depressed, covered with soft skin. Eyes lateral, with free orbital margins. Nostrils close together, the posterior with a valve. A single pair of semi-osseous maxillary barbels. Mouth anterior, crescentic; upper jaw longer; lipes thin. Teeth villiform, in band in jaws;

palatine teeth, obtusely conical, in 2 widely separate patches. Median longitudinal groove on head. Occipital process reaching basal bone of dorsal. Gill openings wide; gill membrane united, anteriorly connected with isthmus. Branchiostegals 5. Rayed dorsal with a moderate, strong spine serrated internally, externally serrated towards the tip. An adipose dorsal. Pectorals low, with a spine stronger than dorsal spine, serrated on both edges. Pelvics with 6 rays, behind the last dorsal ray. Anal with 19—22 rays. Caudal forked. Lateral line. Skin smooth. Occipital, scapular and humero-cubital regions rugose. Air bladder not enclosed in bone. An auxillary pore.

Distribution.—India, Pakistan, Burma, Sri Lanka, Penang, Singapore, Sumatra, Java, Madura, Borneo.

The genus **Osteogeneiosus** is represented by two species in the Indian region.

Key to species of genus **Osteogeneiosus** Bleeker

1. Pelvic origin opposite last ray ; occipital process 3·0 times as long as broad at its base ; length of head 4·7 in total length *O. sthenocephalus*
2. Pelvic origin 1/2 eye diameter behind last dorsal ray ; occipital process 2·5 times as long as broad at its base ; length of head 4·2—4·5 in total length *O. militaris*

286. **Osteogeneiosus militaris** (Linnaeus)

1758. *Silurus militaris* Linnaeus, *Syst. Nat.*, ed. 10, **1**, p. 305. (type locality : Asia).

1840. *Arius militaris* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 114, pl. 430 (Bombay, Mahe, Malabar, Pondichery, Irrawaddy, Rangoon, Malacca).

1846. *Osteogeneiosus macrocephalus* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 173 (type locality : Batavia).

1846. *Osteogeneiosus longiceps* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, **2**(3), p. 174 (type locality : Batavia).

1846. *Osteogeniosus ingluvies* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 174 (type locality : Batavia).

1846. *Osteogeneiosus gracilis* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2)**3**, p. 175 (type locality : Batavia).

1846. *Osteogeneiosus blochii* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2)3, p. 175 (type locality : Batavia).

1846. *Osteogeneiosus valenciennesi* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2)3, p. 175 (type locality : Batavia).

1853. *Osteogeneiosus cantoris* Bleeker, *Verh. Bat. Gen. (Bengal)*, 25, pp. 120, 130, 582 (type locality : Calcutta in Hooghly).

1864. *Osteogeniosus militaris* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 181.

1864. *Osteogeniosus macrocephalus* Günther, *Cat, Fish. Brit. Mus.*, 5, p. 182.

1877. *Osteogeniosus militaris* Day, *Fish. India*, p. 469, pl. 108, fig. 4 (seas, estuaries and tidal rivers of India to the Malay Archipelago; the specimen figured was from Bombay).

1889. *Osteogeniosus militaris* Day, *Fauna Brit. India*, Fish., 1, p. 190.

1910. *Osteogeniosus militaris* Jenkins, *Rec. Indian Mus.*, 5, p. 135 (*Chilka lake*).

1913. *Osteogeneiosus militaris* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, 2, p. 329, fig. 142 (Java, Sumatra, Borneo, Singapore).

1927. *Osteogeneiosus macrocephalus* Fowler, *J. Bombay nat. Hist. Soc.*, 32, p. 255 (Bombay).

1941. *Osteogeneiosus militaris* Fowler, *Bull. U. S. nat Mus.*, (100) 13, p. 772.

1955. *Osteogeneiosus militaris* , Munro, *Mar. Freshwater Fish. Ceylon*, p. 52 (Ceylon).

Vernacular names.—INDIA : *Sunga*, Oriya; *Vengdi etta, Pon-kelithi*, Malayalam; *Pone keliti*, Tamil ; *Pirathi jella*, Telegu; Standardised name : *Sunga, Pirathi jella*. SRI LANKA : *Gal anguluva, Goraka anguluva, Manaval anguluva*, Singhalese.

B. 5; D. 1/7/0; P· 1/10—11; V. 6; A. 19—22 (4—5/15—17); C. 17; Vert. 18—29.

Body elongate. Head strongly depressed, covered by smooth skin, width equalling its length behind angle of mouth, 4·2—4·5; depth 5·5—6·5 in total length (3·4—3·7 and 4·5—5·3 in standard length). Snout rounded, 3·5 in head. Eyes lateral, with free orbital margins, 7·0 in head, 2·0 in snout, 4·9 in interorbital. Mouth arched with thin lips, inferior, upper jaw longer; width of gape of mouth equalling half the length of head. Maxillary barbels stiff and bony, extending to middle of pectorals. Villiform bands of teeth in jaws,; palatine teeth obtusely conical, in 2 widely separated semi-oval patches. Median longitudinal groove on head broad, not reaching base of occipital process. Occipital process 2·5 times as long as broad at its base, reaching basal bone of dorsal. Dorsal 1·2 in head, more than postorbital part of head, with a spine 1·4—1·7 in head, serrated internally and only in its anterior portion externally; origin slightly nearer to adipose dorsal than to snout end and 2·5 eye diameters before pelvic origin; adipose dorsal origin 2 eye diameters before last anal ray; its base equal to rayed dorsal base; interdorsal 3·0 times adipose dorsal base. Pectorals not reaching pelvics, 1·4 in head, with a spine denticulated on both edges. Pelvics not reaching anal, 2·2 in head; origin behind last dorsal ray, nearer to anal origin than to pectoral base. Anterior branched anal ray 1·3 in depth of body; origin an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, 1·2 in head, 5·0—5·4 in total length; least height of caudal peduncle 1·7 in its length. Lateral line.

Skin smooth. Silvery, darkish superiorly; fins tinged red.

It attains 457 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India : Bombay, Mahe, Malabar, Pondicherry, estuaries of W. Bengal. Bangladesh, Burma : mouth of the Irrawaddy, Rangoon. Sri Lanka.—Malacca, Singapore, Sumatra, Java, Borneo; in the latitudinal and longitudinal range of 6°—24° 37′ N., 67° 4′—96° 13′ E. in the Indian region and 11° 30′ N.,—60° 12′ S., 101°—113° E., beyond Indian region.

287. **Osteogeneiosus sthenocephalus** Day

1877. *Osteogeneiosus sthenocephalus* Day, *Fish. India,* p. 469., pl. 108, fig. 3 (type locality : Moulmein).

1889. *Osteogeniosus sthenocephalus* Day, *Fauna Brit. India,* Fish., **1,** p. 191.

1955. *Osteogeneiosus sthenocephalus* Munro, *Mar. Freshwater Fish. Ceylon,* p. 52 (seas, estuaries and tidal rivers).

B.5; D. 1/7/0; P. 1/9; V. 6; A. 20 (5/15); C. 17.

Body elongate. Head depressed, coveredwith smooth skin, width equalling its length behind angle of mouth;

depth 6·7—7·5 in total length (3·9 and 5·7—6·5 in standard length). Snout slightly flattened, 3·3 in head. Eyes lateral, with free orbital margins, 6·4 in head, 2·0 in snout, 3·0 in interorbital. Mouth sub-terminal, arches, with thin lips, upper jaw longer; width of gape of mouth equalling half the length of head. Maxillary barbels stiff and bony, extending to 2/3 of pectoral. Villiform bands of teeth in jaws; palatine teeth, obtusely conical, in 2 separate oval patches. Median longitudinal groove on head, broad, not extending to base of occipital process. Occipital process 3·0 times as long as broad at its base, extending to the basal bone of dorsal. Dorsal 1·2 in head, with a spine 1·4 in head, serrated internally and only at its anterior portion externally; origin midway between adipose dorsal and rayed dorsal origins, 2·0 eye diameters before pelvic origin; adipose dorsal origin 1·3 diameters before last anal ray; its base 1·2 in rayed dorsal base; interdorsal 3·5 times adipose dorsal base. Pectorals not reaching pelvics, 1·3 in head with a spine, serrated on both edges. Pelvics not reaching anal, 1·8 in head; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anterior branches anal ray equal to the depth of body; origin 1·3 eye diameters before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked. 1·2 in head 5·5—5·6 in total length; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Silvery, darkest superiorly.

It attains 125 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—Moulmein, Burma. Seas, estuaries and tidal rivers of Sri Lanka.

133. Genus **Tachysurus** Lacépède

1803. *Tachysurus* Lacépède, *Hist. nat. Poiss.*, **5**, p. 150 (type, T. *sinensis* Lac., orthotypic).

1840. *Galeichthys* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 28 (type *G. feliceps* V., logotypic).

1840. *Arius* Valenciennes, *Hist. Nat. Poiss.* **15**, p. 53 (type *Pimelodus arius* Ham., tautotypic).

1849. *Sciades* Müller & Troschel, *Horae Ichth.*, **3**, p. 6 (type *Bagrus (Sciades) pictus* M. & T.).

1849. *Ariodes* Müller & Troschel, *Horae Ichth.*, 3, p. 6 (type *Bagrus* (*Arius*) *arenarius* M. & T.).

1858. *Hexanematichthys* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, pp. 61, 126 (type, *Bagrus sondaicus* Blkr. orthotypic).

1858. *Selenaspis* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, pp. 62, 92 (type *Silurus herzbergii* Bl.)

1858. *Cephalocassis* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, 62, 92 (type *Arius melanochir* Blrk., logotypic).

1858. *Netuma* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, pp. 62, 93 (type, *Bagrus thalassinus* Rüpp.)

1858. *Guiritinga* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, *Siluri*, pp. 62, 67 (type, *Pimelodus commersonii* Lac.).

1858. *Sciadeichthys* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1** *Siluri*, pp. 62, 66, 99 (type, *Bagrus* (*Sciades*) *pictus* M. & T.).

1861. *Ariopsis* Gill, *Proc. Acad. nat. Sci. Philad.*, p. 56 (type, *Arius milberti* V.)

1862. *Sarcogenys* (*nec* Gray, 1855) Bleeker, *Atl. Ichth. Ind. Neerl.*, **2**, p. 28 (*S. rostratus* Blkr., orthotypic; inadmissible).

1862. *Catastoma* Bleeker, *Atl. Ichth. Ind. Neerl.*, **2**, p. 28 (type, *C. nasutum* Bleeker = *Bagrus thalassinus* Rüppell, orthotypic).

1863. *Hemiarius* Bleeker, *Ned. Tijds. Dierk.*, **1**, p. 90 (type, *Cephalocassis stormi* Blkr.).

1863. *Leptarius* Gill, *Proc. Acad. nat. Sci. Philad.*, p. 170 (type, *L. dowii* Gill, monotypic).

1863. *Notarius* Gill, *Proc. Acas. nat. Sci. Philad.*, p. 171 (type, *Arius grandicassis* V., orthotypic).

1863. *Pseudarius* Bleeker, *Ned. Tijds. Dierk.*, **1**, p. 91 (type *Arius arius* V., orthotypic)

1882. *Cathorops* Jordan & Gilbert, *Bull. U.S. Fish. Comm.*, **11**, p. 39 (type, *Arius hypophthalmus* Steind.).

1898. *Cinctodus* Ogibly, *Proc. Linn. Soc. New South Wales*, **23**, p. 32 (type, *Arius froggatii* Ramsay & Ogilby).

1908. *Nemapteryx* Ogilby, *Ann. Queensland Mus.*, No. **9**, p. 10 (type, *Arius stirlingi* Ogilby).

Body elongate, subterete, posteriorly compressed. Head osseous superiorly or covered with thin skin. Skull with a fontanelle. Pineal foramen often present. Eyes with free orbital margins. Anterior and posterior nostrils close together, the latter with a valve. 6 barbels; one maxillary and 2 mandibular pairs. Mouth anterior, upper jaw slightly longer. Teeth in jaws villiform; vomero-palatine teeth villiform, granular or globular, in one, two or 3 patches on either side. Gill openings wide, membranes not confluent with skin of isthmus, not notched. Branchiostegals 5—6. Dorsal short, with a pungent spine and 7 rays; origin before pelvic origin. Adipose dorsal above anal. Pectorals low, with a strong serrated spine and 9-10 rays. Pelvics with 6 rays; origin behind the vertical from the hind margin of the rayed dorsal. Anal with 14—24 rays. Caudal forked. Lateral line. An axillary pore. Air bladder not enclosed in bone. Skin smooth, naked, except on occipital and nuchal regions of head.

Distribution.—Iraq, India, Pakistan, Bangladesh, Burma, Sri Lanka, Malacca, Singapore, Sumatra, Java, Borneo.

The genus **Tachysurus** is represented by 22 species in the Indian region.

Key to species of genus **Tachysurus** Lacépède

1. Palatine teeth in on or two patches on either side	3
2. Palatine teeth in 3 patches on either side	41
3. Palatine teeth in one patch on either side	5
4. Palatine teeth in two patches on either side	33
5. Palatine teeth villiform or conical	7
6. Palatine teeth globular or granular	19
7. Median longitudinal groove reaching base of occipital process	9
8. Median longitudinal groove not reaching base of occipital process ..	11
9. Palatine patch triangular, as large as eye, separated from the premaxillary band of teeth by a distance less than its length and separated from each other by a distance 1/2—3/4 of its length	*T. sumatranus*

10. Palatine patch oval, equal to eye, separated from the premaxillary band of teeth by a distance twice its length and separated from each other by a distance 2·5 times of its length *T. subrostratus*

11. Palatine patch triangular *T. nenga*

12. Palatine patch oval or ovoid 13

13 Palatine patch equal to or smaller than eye 15

14. Palatine patch larger than eye 17

15. Palatine patch smaller than eye; separated from the premaxillary band of teeth by a distance equal to its length and from each other by a distance twice its length : snout spatulate *T burmanicus*

16. Palatine patch equal to eye, separated from the premaxillary band of teeth and from each other by a distance half its length; snout normal *T. caelatus*

17. Snout much produced, fleshy extending beyond mouth; premaxillary band of teeth 3 times as long as broad ; palatine patch separated from the premaxillary band of teeth and from each other by a distance nearly half its length *T. acutirostris*

18. Snout normal; premaxillary band of teeth 8 times as long as broad ; palatine patch separated from the premaxillary band of teeth by a distance 1/7 of its length and from each other by a distance 1/12 of its length *T. parvipinnis*

19. Median longitudinal groove on head reaching base of occipital process 21

20. Median longitudinal groove on head not reaching base of occipital process 29

21. Premaxillary band of teeth divided in the middle; palatine patch placed far backwards *T satparanus*

22. Premaxillary band of teeth continuous; palatine patch not placed far backwards 23

23. Premaxillary band of teeth 5 times as long as broad; palatine patch round or kidney-shaped, 1/2 eye diameter or larger than eye *T. gagora*

24. Premaxillary band of teeth 6–10 times as long as broad; palatine patch elongate, oval or semi ovate, larger than eye 25

25. Premaxillary band of teeth 10 times as long as broad; palatine patch elongate, oval *T. malabaricus*

26. Premaxillary band of teeth 6—8 times as long as broad ; palatine patch pyriform or ovate **27**

27. Palatine patch pyriform, placed well forwards converging anteriorly; maxillary barbels reaching beyond pectoral base *T. platystomus*

28. Palatine patch convexly ovate, not placed well farwards, converging posteriorly; maxillary barbels as long as head, not reaching pectoral base *T. jella*

29. Premaxillary band of teeth 7·5 times as long as broad; palatine patch pyriform, converging posteriorly; separated from the premaxillary band of teeth by a distance 1/3 its length and from each other by a distance 3/4 its length *T. macronotacanthus*

30. Premaxillary band of teeth 4-5 times as long as broad ; palatine patch elongate, semi-triangular or oval, parallel along median line .. 31

31. Premaxillary band of teeth 4 times as long as broad ; palatine patch semi-triangular, longitudinal, parallel medianly, separated from the premaxillary band of teeth by a distance equal to the width of the premaxillary band .. .. *T. maculatus*

32. Premaxillary band of teeth 5 times as long as broad ; palatine patch oval, separated from the premaxillary band of teeth by a distance 2·5 times the width of the premaxillary band *T. arius*

33. Vomero-palatine teeth villiform or concial 35

34. Vomero-palatine teeth globular or granular 37

35. Vomerine and palatine patches transverse, oval, confluent or separate with each other, meeting or not meeting medianly; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length; palatine patches separated from each other posteriorly by a distance 2 times the length of vomerine patch *T. sagor*

36. Vomerine and palatine patches transverse, not confluent with each other medianly ; vomerine patch separated from the premaxillary band of teeth by a distance 1·5 times its length and from each other by a distance equal to its length ; palatine patch separated from the vomerine patch by a distance less than the length of vomerine patch and from each other posteriorly by a distance less than its length *T. sona*

37. Premaxillary band of teeth 4-6 times as long as broad ; vomero-palatine patch oval, or pear-shaped ; vomerine patch separated from the premaxillary band of teeth by a distance equal to or half its length and from each other by a distance 1.5—2·0 times its length ; palatine patch separated from vomerine patch by a distance equal to or 1/3 the length of vomerine patch and from each other by a distance 1/5 or 1/10 of its length; vomerine patch 3·5 in palatine patch 39

38. Premaxillary band of teeth 8 times as long as broad; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length and separated from each other by a distance 2·0 times its length ; palatine patch sparated from the vomerine patch by a distance equal to the length of the vomerine patch and from each other by a distance 3/4 of its length; vomerine patch 2·0 in palatine patch *T. dussumieri*

39. Premaxillary band of teeth 4 times as long as broad ; vomerine patch separated from the premaxillary band of teeth by a distance 1/2 its length and from each other by a distance 1·5 times its length ; palatine patch separated from the vomerine patch by a distance 1/3 of the length of vomerine patch and from each other by a distance 1/5 of its length . *T. nella*

40. Premaxillary band of teeth 6 times as long as broad ; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length and from each other by a distance twice its length : palatine patch separated from the vomerine patch by a distance equal to the length of the vomerine patch and from each other by a distance 1/10 its length. *T. crossocheilus*

41. 3 vomero-palatine patches, 2 small in front and larger behind, placed close together ; premaxillary band of teeth 8 times as long as broad; occipital keel crenulated .. .. *T. thalassinus*

42. 3 vomero-palatine patches, 2 small in front and a large one behind; placed far apart ; premaxillary band of teeth 5·5 times as long as broad ; occipital keel serrated . *T. serratus*

288. Tachysurus acutirostris (Day)

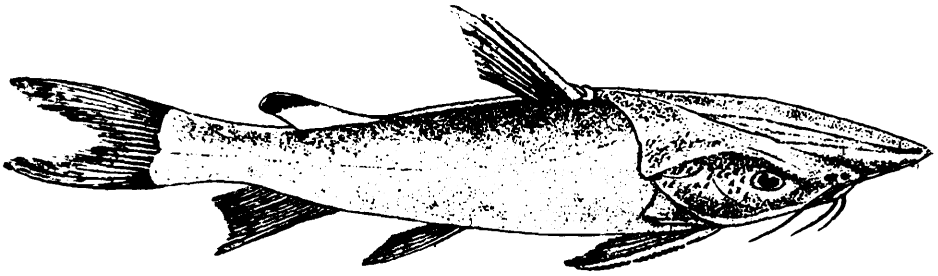
(Text-fig. 2)

1877. *Arius acutirostris* Day, *Fish. India*, p. 459, pl. 107, fig. 1 (type locality : the Salwein river at Moulmein ; type is in the Zoological Survey of India, Calcutta).

1889. *Arius acutirostris* Day, *Fauna Brit. India*, Fish., **1**, p. 75.

1954. *Tachysurus acutirostris* Chandy, *Rec. Indian Mus.*, **51**, p. 3.

Vernacular names.—INDIA : *Khagya, Shingala,* Marathi.



TEXT-FIG. 2.—*Tachysurus acutirostris* (Day) (After F. Day)

B. 5; D. 1/7/0; P. 1/10; V. 6 ; A. 19(5/14); C. 17.

Body elongate, subterate posteriorly. Head depressed, greatest width nearly equals half its length and 1/6 more than its height, 3·5 ; depth 6·0—7·0 in total length (2·8 and 5·0 in standard length). Snout fleshy, elongate, extending beyond mouth, 2·0 in head. Eyes moderate, 7·0—8·0 in head, 4·0 in snout, 2·0 in interorbital. Mouth inferior, gape 1/3 the length of head. Median longitudinal groove on head extending to base of occipital process. Occipital process slightly keeled, longer than wide at its base reaching the narrow V-shaped basal bone of dorsal. Maxillary barbel reaching beyond hind border of eye; outer mandibular nearly 1/5 of length of head, the inner mandibular shorter. Premaxillary band of teeth, villiform about 1/3 deep as wide. Palatine patch on each side oval, oblique, diverging anteriorly, villiform, separated from the premaxillary band of teeth and from each other by a distance nearly half its length. Rayed dorsal with a strong spine half as long as head and serrated on both edges; origin much nearer to snout end than to caudal base and nearer to pectoral base than to anal origin; adipose dorsal base 2/3 of the rayed dorsal base. Pectorals low, 1·8 in head, with a pungent spine as long as dorsal spine, serrated on both edges, reaching 2/3 of the distance to the pelvics. Pelvics 2·6 in head; origin an eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal 2·1 in head; origin slightly behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·8 in head; least height of caudal peduncle 1·5 in its length. Lateral line.

Skin smooth; upper surface of head granulated or with roughened lines. Upper part of rayed dorsal and about 2/3 of adipose dorsal black; pectorals, pelvics, anal and caudal greyish.

It attains 305 mm. in length; has been found in estuaries and tidal rivers.

Distribution.—The Salwein river at Moulmein, Burma.

289. **Tachysurus arius** (Hamilton)

(Text-fig. 3)

1822. *Pimelodus arius* Hamilton, *Fish. Ganges*, pp. 170, 376 (type locality : estuaries of Bengal).

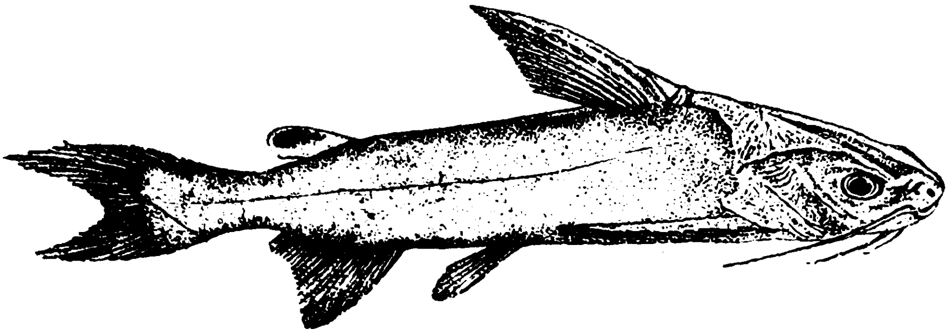
1877. *Arius buchanani* Day, *Fish. India*, p. 463, pl. 105, fig. 6 (type locality : Hooghly at Calcutta; Burma; the specimen, figured, was from the Irrawaddi; type is in the Zoological Survey of India).

1889. *Arius buchanani* Day, *Fauna Brit. India*, Fish., **1**, p. 181.

1916. *Arius arius* Chaudhuri, *Mem. Indian Mus.*, **5**, p. 432 (Chilka lake).

1936. *Arius arius* Hora & Mukerji, *Rec. Indian Mus.*, **38**, p. 18 (Rangoon).

1954. *Tachysurus arius* Chandy, *Rec. Indian* Mus., **51**, p. 4.



TEXT-FIG. 3.—*Tachysurus arius* (Ham.) (After F. Day)

Vernacular names.—INDIA : *Shingada, Err tengra* : Standardised name : *Err tengra.*

B. 6, D. 1/7/0; D. 1/10; V. 6; A. 22 (6/16); C. 17.

Body elongate, subterete posteriorly. Head depressed, greatest width of head equal its length behind the angle of mouth, 4·6; depth 5·8 in the total length (3·5 and 5·0 in standard length). Snout 4·0 in head. Eyes 3·5 in head, 1·7 in snout, 2·2 in interorbital. Mouth inferior gape 3/8 of the length of head. Median longitudinal groove on head shallow, not reaching base of occipital process. Occipital process as wide as at its base as lorng, reaching basal bone of dorsal. The maxillary barbe reaching the first third of the pectoral fin, outer mandibular almost to its base, inner mandibular to postorbit. Premaxillary band of teeth villiform, 5 times as long as broad; palatine patch, on each side, with large globula teeth, as large as eye , oval, parallel to each other, separated from the premaxillary band of teeth by a distance 2·5 times the depth of the premaxillary band and separated from each other by a distance 1·5 its length. Rayed dorsal with a pungent spine as long as head behind the angle of mouth, anteriorly roughened in its lower 2/3 and serrated in its upper half and feebly serrated posteriorly; origin nearer to snout end than to adipose dorsal origin and nearer to pectoral base than to pelvic origin; adipose dorsal base 3/4 of rayed dorsal base. Pectorals low, nearly equal to head, reaching pelvic base, with a strong spine serrated on both edges and as long as dorsal spine. Pelvics 2·0 in head, reaching anal origin; origin an eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·7 in head; origin an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal origin. Caudal forked, 1·4 in head; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth; upper surface of head lineated in roughened lines. Silvery along back, lighter on sides and below; pectorals and dorsal edged posteriorly with black, adipose dorsal with a well defined black spot.

It attains 185 mm. in length; has been found in estuaries, tidal rivers and tidal lakes.

Distribution.—India : Calcutta, W. Bengal, Chilka lake, Orissa, Kerala. Bangladesh. Burma : Rangoon in the Irrawaddi.

290. **Tachysurus burmanicus** (Day)

1869. *Arius burmanicus* Day, *Proc. zool. Soc.* Lond., p. 618, (type loc. Moulmein, Burma; type in Zoological Survey of India).

1877. *Arius burmanicus* Day, *Fish. India*, p. 458, pl. 105, fig. 4 (specimen 9 inches in length, figured was from Moulmein).

1889. *Arius burmanicus* Day, *Fauna Brit. India*, Fish., **1**, p. 174.

1954. *Tachysurus burmanicus* Chandy, *Rec. Indian Mus.*, **51**, p. 5.

Vernacular name.—BURMA : *Nga-kyoung.*

B. 6; D. 1/7/0; P. 1/10; V 6; A. 19—22 (4—6/15—16); C. 15.

Body elongate, subterete posteriorly. Head depressed, greatest width 2/5 of its length, 3·5—3·6; depth 7·0 in the total length (3·1 and 6·0 in standard length). Snout spatulate, 3·0 in head. Eyes without free orbital edges, 7·0—8·5 in head, 2·5—3·0 in snout, 1·5—2·0 in interorbital. Mouth inferior, upper jaw the longer. Median longitudinal groove on head narrow, not extending to the base of occipital process. Occipital process keeled, wider at its base than long, superiorly reaching a V-shaped basal bone of dorsal. Maxillary barbels nearly reaching the pectoral base, outer mandibulars not quite reaching the pectoral base, inner mandibulars to postorbit. Premaxillary band of teeth 5 times as long as broad; palatine patch on each side with villiform teeth, smaller than eye, oval, oblique, diverging posteriorly, separated from the premaxillary band of teeth by a distance equal to its length and separated from each other by a distance twice its length. Rayed dorsal with a pungent spine half as long as head, serrated on both edges; origin much snout end than to caudal base, between adipose dorsal origin and snout end. Adipose dorsal base as long as rayed dorsal base. Pectorals low, 1·4 in head, not reaching pelvics, with a strong spine serrated on both edges, equal in length to the dorsal spine. Pelvics 2·0 in head, nearly reaching anal origin; origin half eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·7 in head; origin slightly before adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, 1·7 in head; least height of caudal peduncle 3·4 in its length. Lateral line.

Skin smooth; upper surface of head with roughened lines becoming rougose at the posterior end of the median groove and on the occipital process. Purplish dashed with copper, becoming dull white on sides and beneath; both dorsals tinted black.

It attains 305 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—Bassein, Moulmein, Burma.

291. **Tachysurus caelatus** (Valenciennes)

(Text-fig. 4)

1840. *Aruis caelatus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 6 (type locality : Bombay).

1840. *Arius acquibarbis* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 68 (type locality : Rangoon; Bengal).

1840. *Arius granosus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 69 (type locality : Pondicherry).

1846. *Arius caelatoides* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 159 (type locality : Batavia)

1846. *Arius microgastropterygius* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 160 (type locality : Batavia).

1846. *Arius clypeaster* Bleeker, *Nat. Gen. Arch. Ned Ind.*, (2) p. 3, 161. (type locality : Batavia).

1846. *Arius clypeastroides* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 161 (type locality : Batavia).

1846. *Arius chondropterygius* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 162 (type locality : Batavia).

1849. *Arius melanopterygius* Bleeker, *Verh. Bat. Gen.*, **22,** p. 10 (type locality : Madura Straits near Kamal and Surabaya).

1864. *Arius caelatus* Günther, *Cat. Fish. Brit. Mus.*, **5,** p. 158, fig. (teeth).

1877. *Arius caelatus* Day, *Fish. India*, p. 259, p.l, **105,** fig. 5 (Moulmein).

1889. *Arius caelatus* Day, *Fauna Brit. India,* Fish., **1,** p. 174.

1907. *Arius caelatus* Lloyd; *Rec. Indian Mus.*, **1,** p. 223 (Akyab).

1913. *Arius caelatus* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2,** p. 310, fig. 134 (upper teeth).

1916. *Arius caelatus* Chaudhuri, *Mem. Indian Mus.*, **5,** p. 432, text-fig. 10 (Chilka Lake).

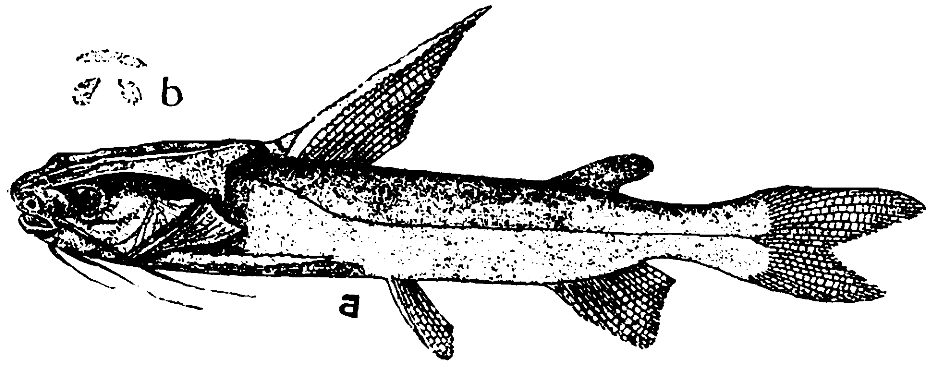
1929. *Arius caelatus* Pillay, *J. Bombay nat. Hist. Soc.*, **33,** p. 359 (Trivandrum).

1936. *Tachysurus caelatus* Suvatti, *Index Fish. Siam,* p. 62 (Thailand).

1941. *Tachysurus caelatus* Fowler, *Bull. U S. nat. Mus.*, (100) **13,** p. 758.

1954. *Tachysurus coelatus* Chandy, *Rec. Indian Mus.*, **51,** p. 5 (error in spelling).

1955. *Tachysurus caelatus* Munro, *Mar. Freshwater Fish. Ceylon,* p. 53. (Seas, estuaries and tidal rivers).



TEXT-FIG. 4.—*Tachysurus caelatus* (V.) (*a*) Lateral view (*b*) Dentition (After F. Day)

Vernacular names.—INDIA: *Kelithi,* Malayalam. SRI LANKA: *Anguluva*, Singhalese ; *Keleru,* Tamil.

B.6 ; D. 1/7/0; P. 1/9; V 6; A.19-20 (5-6/13-14); C.15.

Body elongtate, subterete posteriorly. Head depressed, broader than high; greatest width equal to its posterior to the nostrils, 4·5—4·6; depth 6·5 in total length (3·5 and 5·3 in standard length). Snout short, 4·0 in head. Eyes 6·0 in head, 2·0 —2·5 in snout, 3·0—4·0 in interorbital. Mouth inferior, width equalling postorbital length of head, upper jaw longer, angle of mouth not extending posteriorly below orbit. Median longitudinal groove narrow, deep posteriorly, not reaching base of occipital process. Occipital process keeled, as broad or broader at its base than long, reaching the narrow V-shaped basal bone of the dorsal. Maxillary barbels reaching middle of pectorals, the mandibulars 1/5 shorter. Premaxillary band of teeth villiform, 6 times as long as broad; palatine patch on each side with villiform teeth, equalling eye, separated from the premaxillary band of teeth and from each other by a distance 1/2 its length. Rayed dorsal with a strong pungent spine equal to head, with a soft prolongation, granulated both laterally and anteriorly and serrated in its upper part and posteriorly in its whole extent; origin equidistant between snout end and adipose dorsal origin; adipose dorsal base shorter than base of rayed dorsal, equalling nearly half of interdorsal. Pectorals low, 1·2 in head, with a strong pungent spine shorter than dorsal spine, granulated externally and serrated internally. Pelvics 2·0 in head, not reaching anal origin; origin 1/2 eye diameter behind last dorsal ray, nearer to anal origin than to pectoral origin. Anal 1·6 in head; origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head; least height of caudal peduncle 2·1 in its length. Lateral line.

Skin smooth; upper surface of head and occipital process strongly granulated. Bluish along back and sides becoming white beneath; adipose dorsal black with its anterior and posterior margins yellow; upper part of dorsal, ends of pectorals and pelvics black; anterior part of anal black.

It attains 300 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India : Bombay, Maharashtra, Pondicherry, Puri, Orissa, W. Bengal. Pakistan. Bangladesh. Burma : Rangoon, Moulmein; Sri Lanka.—Thailand, Sumatra, Java, Borneo, Sarawak, Moratabas; in the latitudinal and the longitudinal range of 60′— 24° 57′ N., 67° 4′—97° 00′. E. in the Indian region and 12° 30′ N.—6° 12′ S., 101°—113° 30′ E., beyond Indian region.

292. Tachysurus crossocheilus (Bleeker)

1846. *Arius crossocheilus* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) 3, p. 137 (type locality : Batavia).

1846. *Arius tonggol* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) 3, p. 292 (type locality : Batavia).

1864. *Arius tonggol* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 164.

1913. *Arius crossocheilus* Weber & de Beaufort, *Fish Indo-Austral. Archipel.*, 2, p. 276 (Java, Sumatra; Bintang; Banka; Celebes).

1938. *Tachysurus tonggol* Fowler, *List Fish. Malaya*, p. 51 (Malaya).

1941 *Tachysurus crossocheilus* Fowler, *Bull. U.S. nat. Mus.*, (100) 13, p. 768.

1953. *Arius crossocheilus* Herre, *Check List Philippine Fish.*, p. 128 (Philippines).

1954. *Tachysurus crossocheilus* Chandy, *Rec. Indian Mus.*, 51, p. 6, text-fig. 2 *a*.

B. 6; D. 1/7/0; P. 1/11; V 6; A. 18 (5/13).

Body elongate, subterete posteriorly. Head depressed, broader than high, the greatest depth 2/3 of its length, 3·2—3·5; depth 4·5—5·0 in the standard length. Snout 2·2—2·5 in head. Eyes with free orbital margins, 5·3—6·2 in head, 2·0—3·0 in snout, 2·8—4·0 interorbital. Mouth inferior, width 3·0—3·1 in head. Median longitudinal groove not reaching occipital process. Occipital process a little longer than its basal width, reaching the basal bone of the dorsal. Maxillary barbels reaching pectoral origin, outer mandibulars reaching 3/4 to pectoral origin. Premaxillary band of teeth villiform, 6 times as long as broad. Vomero-palatine teeth globular, in 4 separate patches, as two well separated small patches anteriorly and two large ovoid patches posteriorly close-set and converging behind. Rayed dorsal with a strong pungent spine nearly equal to head minus snout, with its front border granulated and serrated at top and along the whole hind border; adipose dorsal base much less than the dorsal base, 5·0—6·0 in interdorsal. Pectorals low, 1·3—1·5 in head, with a strong flattened spine serrated on both edges, as long as dorsal spine. Pelvic origin behind dorsal origin. Anal concave. Caudal forked, 1 1 in head; least height of caudal peduncle 3·6—4·1 in its length.

Skin smooth; upper surface of head and occipital process roughened with granulated lines. Bluish brown above, silvery white on sides and below; fins yellowish with dusky margins.

It attains 375 mm. in length; has been obtained from seas.

Distribution.—India : Bombay, Maharashtra. Pakistan. Malaya, Sumatra, Java, Banka, Celebes, Philippines; in the latitudinal and longitudinal range of 15°—24° 57′ N., 67° 4′—72° 54′ E., in the Indian region and 14° 30′ N.—60° 12′ S., 102°—121° 30′ E. beyond Indian region.

293. **Tachysurus dussumieri** (Valenciennes)

1840. *Arius dussumieri* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 84 (type locality: Malabar).

1864. *Arius dussumieri* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 163.

1877. *Arius dussumieri* Day, *Fish. India*, p. 467, pl. 107, fig. 7 (Malabar coast of India and Ceylon ; specimen figured was from Malabar).

1889. *Arius dussumieri* Day, *Fauna Brit. India*, Fish., **1**, p. 188.

1910. *Arius dussumieri* Jenkins, *Rec. Indian Mus.*, **5**, p. 131 (Karachi).

1912. *Arius dussumieri* Jenkins, *Rec. Indian Mus.*, **7**, p. 53 (Mutlah).

1954. *Tachysurus dussumieri* Chandy, *Rec. Indian Mus.*, **51**, p. 6.

1955. *Ariodes dussumieri* Munro, *Mar. Freshwater Fish. Ceylon.* p. 54 (brackish water, entering estuaries).

Vernacular names.—INDIA : *Shingati*, Bombay; *Mungali Shede*, S. Canara; *Mandai Kalavu*, Madras; *Vellia etta*, Malabar; *Kazhu-theydoo*, Malayalam; Standardised name : *Vellia etta.*

B. 6; D. 1/7/0; P. 1/12; V. 6; A. 14—16 (4-5/10-11); C. 17.

Body elongate, subterete posteriorly. Head depressed, one fourth wider than high, width equal to head minus snout or even behind the angle of mouth, 4·0—4·5; depth 5·0 in the total length. Snout 3·0 in head. Eyes 6·5 in head, 2·3 in snout, 4·0 in interorbiral. Mouth interior, equalling 4/9 of the length of head, upper jaw the longer. Median longitudinal groove shallow, becoming most distinct posteriorly, reaching the base of occipital process. Occipital procss strongly keeled, as wide at its base as long, its lateral edges straight and reaching the S—shaped basal bone of the dorsal. The maxillary barbels reaching just beyond the pectoral base. the external mandibulars not quite so long. Premaxillary band of teeth villiform, 8 times as long as broad; vomero-palatine teeth conical, in four widely separate patches, vomerine patches being smaller than the palatine patches; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length and separated from each other by a distance twice its length; palatine patch separated from vomerine patch by a distance equal to length of vomerine patch and from each by a distance 3/4 of its length posteriorly; vomerine patch 2·0 in palatine patch. Rayed dorsal with a pungent spine, as long as head minus snout, anteriorly upper half serrated, the lower roughened, posteriorly serrated throughout; adipose dorsal base half of the rayed dorsal base. Pectorals low, reaching 2/3 of the distance to pelvics, with a strong spine shorter than the dorsal spine, externally serrated in its anterior half, rough in the posterior half, internally serrated throughout. Pelvics reaching anal. Caudal forked. Lateral line.

Skin smooth; a few scattered granulations on the posterior part of head and over base of occipital process. Bluish on back, becoming lighter on sides and below, fins blackish externally.

It attains about 305 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India : Malabar, Kerala, Ennore, Madras, Mutlah, W. Bengal. Pakistan. Bangladesh. Burma: Rangoon. Sri Lanka. East coast of S. Africa (Delogoa Bay); in the latitudinal and longitudinal range of 6°—24° 57′ N., 67° 4′—96° 53′ E. in the Indian region and 32° 50′ E. 25° 30′ S., in S. Africa.

294. **Tachysurus gagora** (Hamilton)

1822. *Pimelodus gagora* Hamilton, *Fish. Ganges*, pp. 167, 376, pl. 10, fig. 54 (type locality : estuaries of Bengal).

1864. *Arius macracanthus* Günther, *Cat. Fish. Brit. Mus.*, **5**, pl. 167, fig. (teeth and occiput) (type locality : Siam).

1864. *Arius gagora* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 168 (Ganges).

1877. *Arius gagora* Day, *Fish. India*, p. 465, pl. 107, fig. 2 (the specimen figured 10 inches in length was from Calcutta).

1889. *Arius gagora* Day, *Fauna Brit. India*, *Fish.*, **1**, p. 185.

1945. *Tachysurus gagora* Smith, *Bull. U.S. nat. Mus.*, **188**, pp. 407, 409 (Thailand).

1949. *Tachysurus gagora* Hora, *Rec. Indian Mus.*, **46**, p. 68.

1954. *Tachysurus gagora* Chandy, *Rec. Indian Mus.*, **51**, p. 7.

B. 6; D. 1/7/0; P. 1/0; V 6; A. 18 (5-6/13-12); C. 17.

Body elongate, subterete posteriorly. Head depressed, 1/4 wider than high, width equalling length minus snout, 4·0—4·2; depth, 6·7 in total length (3·3 and 4·8 in standard length). Snout 3·3 in head. Eyes 7·0—8·0 in head, 2·5 in snout, 3·0—3·5 in interorbital. Mouth inferior, upper jaw longer, width of gape of mouth 4/11 of the length of head. Median longitudinal groove narrow, deep, reaching nearly base of occipital process. Occipital process keeled, slightly longer than wide at its base, reaching a narrow V-shaped basal bone of dorsal fin. Opercle higher than wide. Maxillary barbels not quite so long as head, outer mandibulars reaching the gill opening. Premaxillary band of teeth villiform, 5 times as long as broad; palatine patch on each side with globular teeth in large semi-oval patch separated from the premaxillary band by a distance equal to the depth of the premaxillary band of teeth and separated from each other by a distance twice the depth of the premaxillary band of teeth. Rayed dorsal with a pungent spine as long as the postorbital part of head, anteriorly serrated in its upper half, rough in its lower half, posteriorly serrated; origin nearer to snout end than to caudal base and adipose dorsal origin; adipose dorsal base 2/3 of rayed dorsal base. Pectorals low, 1·3 in head, reaching 2/3 of the distance to pelvics, with a strong spine equal to dorsal spine, externally serrated, internally denticulated. Pelvics 2·0 in head, not reaching anal fin; origin an eye diameter behind the last dorsal ray, much nearer to anal origin than to pectoral base. Anal 2·2 in head; origin slightly before adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, nearly equal to head; least height of caudal peduncle 1·7 in its length. Lateral line.

Skin smooth; most of the occiput and whole of occipital process granulated. Purplish superiorly, becoming dull white beneath; fins externally stained gray or black; adipose dorsal with a blackish spot.

It attains 457 mm. in length; according to Hamilton 3 ft. (915 mm.) or more in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India, : Ganges at Calcutta, W. Bengal. Burma : Pegu.—Thailand; in the latitudinal and longitudinal range of 17° 20′—22° 53′ N., 88° 26′—96° 29′ E. in the Indian region and 11° 30′. N., 101° E. in Thailand.

295. **Tachysurus jella** (Day)

1877. *Arius jella* Day, *Fish. India*, p. 467, pl. 106, fig. 3 (on *Deddi jellah* Russell, 803, *Fish, Coromandel,* **2,** p. 54, pl 169, type locality : Vizagapatam), Madras).

1889. *Arius jella* Day, *Fauna Brit. India*, Fish., **1,** p. 187.

1954. *Tachysurus jella* Chandy, *Rec. Indian Mus.*, **51,** p. 7.

1955. *Pseudarius jella* Munro, *Mar. Freshwater Fish. Ceylon*, p. 55 (sea and estuaries).

Vernacular names.—INDIA : *Vellai Kelati, Deddi jellah ;* Standardised name : *Vellai Kelati.*

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 17-18 (4.-5/13);C 19.

Body elongate, subterate posteriorly. Head depressed, greatest width 1/6 more than its height and equals length behind nostrils, 4·2—4·7; depth 6·7 in total length (3·3 , 5·7 in standard length). Snout 4·0 in head. Eyes 6·0 in the head, 2·0—2·3 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer, gape of mouth 3/8 the length of head. Median longitudinal groove becoming narrow and deep posteriorly, reaching nearly base of occipital process. Occipital process slightly keeled, with straight sides a little longer than broad, emarginate posteriorly, reaching narrow basal bone of the dorsal. Maxillary barbels nearly as long as head, not reaching pectoral base, outer mandibulars almost reaching gill opening, the inner shorter. Premaxillary band of teeth villiform, 6·0 times as long as broad; palatine patch with globular teeth, convex, oblong-ovate, on each side converging behind, separated from the premaxillary band and from each other by a distance half its length. Rayed dorsal with pungent spine as long as head minus snout, often with a very long soft prolongation, slightly serrated anteriorly or merely rough in large specimens, strongly serrated posteriorly; origin equidistant between snout end and adipose dorsal origin; adipose dorsal base slightly shorter than rayed dorsal base. Pectorals low, 1·3 in head, with a strong pungent spine, slightly longer than dorsal spine, slightly serrated externally, denticulated internally, not reaching pelvics. Pelvics 1·7 in head, reaching anal; origin nearly 1·5 eye diameters behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·7 in head; origin nearly opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1 1 in head; least height of caudal peduncle 1·5 in its length. Lateral line.

Skin, smooth, occipital process closely granulated. Silvery grey above becoming whitish on sides and below; fins tinted grey, anal with white outer edge, adipose dorsal with black blotch.

A specimen measuring 127 mm. has been obtained; found in seas, estuaries and tidal rivers.

Distribution.—India : Madras, Vishakhapatnam, Andhra, Pulta, W. Bengal. Sri Lanka.

296. **Tachysurus macronotacanthus** (Bleeker)

1846. *Arius macronotacanthus* Bleeker, *Nat. Gen. Arch. Ned.* (2)3, p. 159 (type locality : Java).

1864. *Arius macronotacanthus* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 169.

1877. *Arius macronotacanthus* Day, *Fish. India*, p. 465, *nec.* pl. 113, fig. 1.

1889. *Arius macronotacanthus* Day, *Fauna Brit. India*, Fish., 1, p. 184.

1913. *Arius macronotacanthus* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, 2, p. 309, figs. 132, 133 (Java; Sumatra; Singapore; Pinang).

1954. *Tachysurus macronotacanthus* Chandy, *Rec. Indian Mus.*, 51, p. 8.

B. 6; D. 1/7/0; P. 1/9; V. 6; A. 18-19 (6·7-12.13); C. 15.

Body elongate, subterete posteriorly. Head depressed greatest width exceeding its height, equalling its length minus snout, 4·0—4·1; depth 5·5 in total length (3·3 and 4·5—4·7 in standard length). Snout 3·6 in head. Eyes 5·2—6·0 in head, 1·5 in snout, 2·5 in interorbital. Mouth inferior, gape of mouth 4/9 of the length of head. Median longitudinal groove wide between eyes, becoming pointed both anteriorly and posteriorly, not reaching base of occipital process. Occipital process as broad as long, reaching the narrow V-shaped basal bone of dorsal. The maxillary barbels reaching middle of pectoral spine, outer mandibulars reaching pectoral base. The premaxillary band of teeth villiform, 7·5 times as long as broad; palatine patch wide obtusely fine granular teeth, pearshaped on each side, as long as eye, diverging posteriorly, separated from the premaxillary band by a distance 1/3 of its length and separated from each other by a distance 3/4 of its length. Rayed dorsal with a strong pungent spine as long as head behind the nostrils, very rugose laterally, serrated on both edges, with a soft termination ; adipose dorsal base equal to rayed dorsal base, 3·0 in interdorsal; origin above anterior half of anal. Pectorals low, with a pungent spine as long as head minus snout, roughened and serrately externally, denticulated internally, reaching 2/3 the distance to the pelvics. Pelvics shorter than pectorals, not reaching anal. Caudal forked, 6·5 in total length. Lateral line bifurcating at caudal base.

Skin smooth; upper surface of head granulated in groups; occipital process densely so in lines. Dark bluish above, whitish below; dorsal base darkish; a large black blotch on adipose dorsal.

It attains 300 mm. in length; has been found in seas.

Distribution.—India.—Penang, Singapore, Sumatra, Java, in the latitudinal and longitudinal range of 11° 41′ N., 92° 43′ E., in Port Blair and 5° 25′ N.—6° 12′ S., 100° 14′—106° 50′ E., beyond Indian region.

297. Tachysurus maculatus (Thunberg)

(Text-fig. 5)

1792. *Silurus maculatus* Thunberg, *Kon. Vet.' Akad. Nya Handl. Stockholm*, **13**, p. 31, pl. 1, fig. 2 (type locality : Japan).

1844. *Arius falcarius* Richardson, *Voy. "Sulphur" Ichth.*, p. 134 p. 162, figs. 7-9 (type locality : China; type is in the British Museum, London).

1864. *Arius falcarius* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 168, fig. (teeth and occiput) (Formosa; China; Canton; Amoy).

1867. *Arius boakeii* Turner, *J. Anat. Phys.*, **1**, p. 78 (type locality : Ceylon).

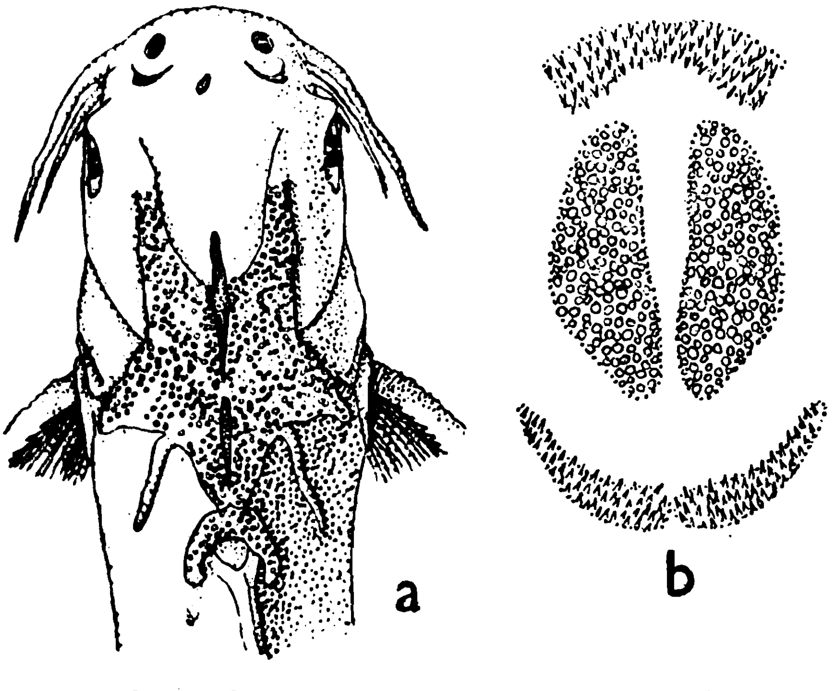
1877. *Arius falcarius* Day, *Fish. India*, p. 463, p. 106, fig. 5 (Calcutta, seas of India to China).

1889. *Arius falcarius* Day, *Fauna Brit. India*, Fish., **1**, p. 168.

1890. *Arius falcarius* Vinciguerra, *Pesci di Birmania*, p. 112 (Rangoon).

1916. *Arius falcarius* Raj, *Rec. Indian Mus.*, **12**, p. 264 (Madras).

1916. *Arius falcarius* Chaudhuri, *Mem. Indian Mus.*, **5**, p. 433, text-fig. 11 (Chilka lake).



TEXT-FIG. 5.—*Tachysurus maculatus* (Thunberg) (*a*) Dorsal view of head (*b*) Dentition (After M. Chandy)

1929. *Arius falcarius* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 359 (Trivandrum).

1941. *Tachysurus maculatus* Fowler, *Bull. U. S. nat. Mus.*, 100 (13), p. 757 (Rangoon : Hongkong).

1954. *Tachysurus falcarius* Chandy, *Rec. Indian Mus.*, **51**, p. 7, pl. 3, fig. 6.

1955. *Tachysurus maculatus* Munro, *Mar. Freshwater Fish. Ceylon*, p. 55 (estuaries and tidal rivers).

Vernacular names.—INDIA : *Theydoo*, Malayalam. SRI LANKA : *Gal anguluva*, Singhalese; *Ralla Keleru* Tamil.

B. 6; D. 2/6-7/0; P. 1/10; V. 6; A. 18-20 (5-6/13-14); C. 17.

Body elongate, subterete posteriorly. Head depressed, its greatest width equalling length of head behind angle of mouth, exceeding its height by 1/6, 4. 0—5. 0; depth 5. 2—6. 0 in the total length (3·6 and 4.0 in standard length). Snout 3.5 in head. Eyes 5.0-6.0 in head, 2.2 in snout, 3.0—3.5 in interorbital. Mouth broadly cresentic, upper jaw the longer, gape of mouth equalling 3/7 of the length of head. Median longitudinal groove wide anteriorly, narrowing midway between the front edge of eye and the hind edge of opercle, not quite reaching base of occipital process. Occipital process, keeled, longer than wide at its base, reaching the V-shaped narrow, short basal bone of dorsal. Maxillary barbels black, reaching hind edge of head, outer mandibulars to gill openings, the inner shorter. The premaxillary band of teeth, villiform, 4 times as long as wide; palatine patch with anterior granular and posterior globular teeth, elongate, semi-triangular on each side, longer than wide, parallel to each other in the median line, with external edge convex anteriorly almost reaching premaxillary teeth, separated from the premaxillary band of teeth by a distance equal to depth of the premaxillary band. Rayed dorsal with a strong pungent spine ending in a soft point, equalling length of head minus snout, serrated anteriorly in its upper half, rough in its lower half and serrated posteriorly ; origin nearer to snout end than to adipose dorsal origin; adipose dorsal base 3/7 of rayed dorsal base. Pectorals low, 1·2 in head, with a strong pungent spine, slightly longer than dorsal spine, serrated externally in its outer half, roughened along its lower half and serrated posteriorly. Pelvics 1·2 in head, reaching anal origin; origin much nearer to anal origin than to pectoral base. Anal 1·4 in head; origin 1·2 eye diameter before adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 6·0 in total length ; least height of caudal peduncle 2·0 in its length. Lateral line bifurcating at caudal base.

Skin smooth; upper surface of head behind eyes (except in groove) and occipital process strongly granulated. Bluish grey above, dull white below; fins greyish; dorsal black tipped; adipose dorsl with a black spot and anal sometimes spotted.

It attains 358 mm. in length; has been obtained in seas, estuaries and tidal rivers.

Distribution.—India : Bombay, Canara, Mysore, Madras, Chilka lake, Calcutta, W. Bengal; Orissa. Pakistan. Bangladesh. Burma : Rangoon. Sri Lanka. Hongkong, Formosa, Amoy, Canton, China, Japan; in the latitudinal and longitudinal range of 6°—24° 57′ N., 67° 4′—96° 13′ E. in the Indian region and 22° 12′—35° N., 113° 14′—135° E. beyond Indian region.

298. **Tachysurus malabaricus** (Day)

1877. *Arius malabaricus* Day, *Fish. India,* p. 464, pl. 107, fig. 4 (head) (type locality: Canara; type is in the Zoological Survey of India, Calcutta).

1889. *Arius malabaricus* Day, *Fauna Brit. India,* Fish, **1,** p. 183.

1954. *Tachysurus malabaricus* Chandy, *Rec. Indian Mus.,* **51**, p. 8.

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 20 (6/14); C. 17.

Body elongate, subterete posteriorly. Head depressed, greatest width equalling its length behind nostril, wider than high, 4·2; depth 5·5 in total length; snout 3·0 in head. Eyes 6·5 in head, 2·5 in snout and 3·5 in interorbital. Mouth inferior, upper jaw longer, gape equalling 2/5 the length of head. Median longitudinal groove commencing opposite hind border of eye, becoming narrow and deep posteriorly, reaching nearly to base of occipital process. Occipital process slightly keeled, as broad at its base as long, emarginate posteriorly, reaching the V-shaped basal bone of dorsal. Maxillary barbels black, as long as head, outer mandibulars shorter. Premaxillary band of teeth, villiform, 10 times as long as broad; palatine patch with granular teeth, elongated, oval, on each side reaching far forwards, slightly convergent anteriorly, separated from the premaxillary band of teeth by a distance equal to the depth of the premaxillary band and separated from each other by a distance half its length anteriorly and 2/3 posteriorly. Rayed dorsal with a spine of moderate strength as long as head behind the angle of mouth, anteriorly granulated on its lower half, serrated on its upper half and serrated posteriorly; soft dorsal base short. Pectorals low, with a pungent spine as long as head, granulated internally and extending below last dorsal ray. Pelvics not reaching anal. Anal below adipose dorsal. Caudal forked, 5·5 in total length. Lateral line.

Skin smooth; upper surface of head sparingly granulated, entirely without ridges. Silvery, glossed with gold below; adipose dorsal with a black spot in its upper half.

It attains nearly 150 mm. in length; has been found in seas.

Distribution.—India : Canara, Mysore, Malabar, Kerala.

299. **Tachysurus nella** (Valenciennes)

(Text-fig. 6)

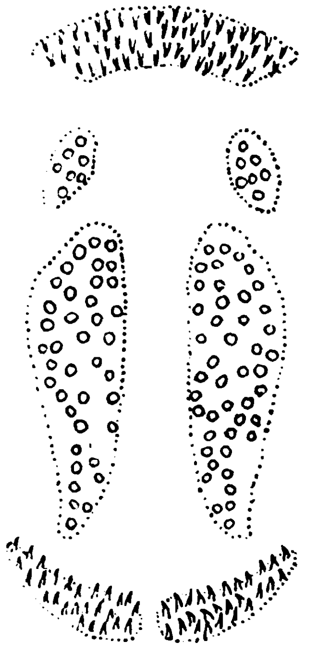
1840. *Pimelodus nella* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 162 (On *Nallah jellah* Russell, 1803, *Fish Coromandel*, **2**, p. 55, pl. 170; type locality : Vizagapatam).

1877. *Arius nella* Day, *Fish. India*, p. 465 (Corcmandel Coast).

1889. *Arius nella* Day, *Fauna Brit. India*, Fish., **1**, p. 184.

1912. *Arius nella* Jenkins, *Rec. Indian Mus.*, **7**, p. 60 (Puri).

1954. *Tachysurus nella* Chandy, *Rec. Indian Mus.*, 51, p. 8, pl. 1, fig. 6 & pl. 3, fig. 2.



TEXT-FIG. 6.—Dentition of *Tachysurus nella* (V.) (After M. Chandy)

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 19; C. 19.

Body elongate, subterete posteriorly. Head broad, depressed, 3·8—4·1; depth 4·4 in total length (2·4—3·1 and 3·7 in standard length). Snout 2·1—2·5 in head, Eyes in the anterior half of head, 4·6—6·0 in head, 2·1—2·5 in snout, 2·9 in interorbital. Mouth inferior, upper jaw the longer, gape of mouth equalling head behind postorbit. Median longitudinal groove not quite reaching occipital process. Occipital process as broad at its base as long, reaching basal bone of dorsal. Maxillary barbels reaching middle of pectoral fin, outer and inner mandibular barbels nearly half of head. Premaxillary band of teeth villiform, 4 times as long as broad; vomero-palatine patch on each side distinct with globular teeth; vomerine patch separated from the premaxillary band of teeth by a distance 1/2 of its length and from each other by a distance 1·5 times its length; palatine patch wedge-shaped, separated from the vomerine patch by a distance 1/3 of the length of vomerine patch and from each other by a distance 1/5 of its length. Rayed dorsal with a pungent spine 2/3 of head, serrated on both sides; origin nearer to snout end than to adipose dorsal origin; adipose dorsal base 2·0 in rayed dorsal base. Pectorals low, 1·6 in head, with a pungent spine serrated on both edges and slightly shorter than dorsal spine. Pelvics 2·0 in head, not reaching anal; origin 2½ eye diameters behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 2·0 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1 1 in head; least height of caudal peduncle 1·5 in its length. Lateral line.

Skin smooth; upper surface of head and occipital process granulated. Head and back bluish laden, throat, belly and hind part of tail dull white; the whole trunk with small obscure dusky dots; dorsal, pelvics and anal black edged; pectorals and caudal glossy with a pale yellow tinge.

It attains 182 mm. in length; has been found in seas.

Distribution.—India : Lawson's Bay, Vishakhapatnam, Andhra and Puri, Orissa coast.

300. **Tachysurus nenga** (Hamilton)

(Text-fig. 7)

1822. *Pimelodus nenga* Hamilton, *Fish. Ganges*, pp. 171, 376 (type locality : estuaries of Bengal).

1864. *Arius arioides* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 143 (Bengal).

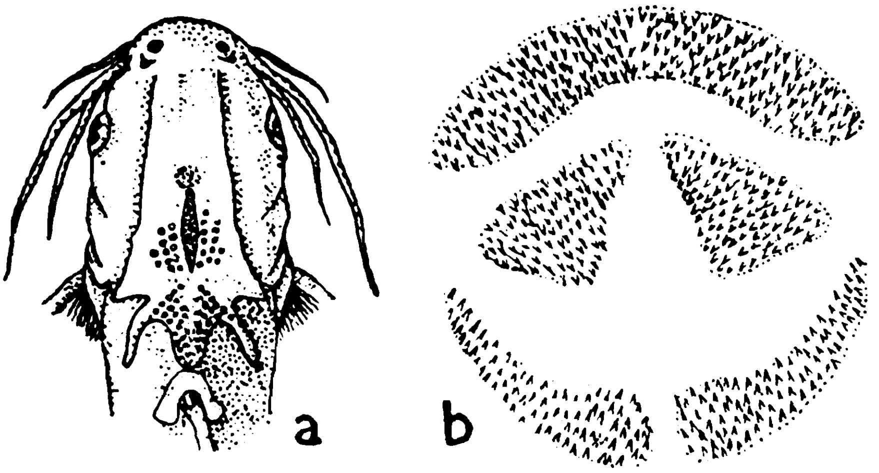
1877. *Arius nenga* Day, *Fish. India*, p. 458, pl. 104, fig. 3 (the specimen figured, life size was from Hooghly at Calcutta).

1889. *Arius nenga* Day, *Fauna Brit. India*, Fish., **1**, p. 173, fig. 67.

1933. *Arius nenga* Sorley, *Mar. Fish. Bombay Presid.*, p. 160.

1949. *Arius nenga* Hora, *Rec. Indian Mus.*, **46**, p. 69.

1954. *Tachysurus nenga* Chandy, *Rec. Indian Mus.*, **51**, p. 10, pl. 1, fig. 8; pl. 3 fig. 5.



TEXT-FIG. 7.—*Tachysurus nenga* (Ham.) (*a*) Dorsal view of head (*b*) Dentition (After M. Chandy)

Vernacular names.—INDIA : *Nenga tengra,* Bengal; *Shingal-petdda,* Marathi; *Nenga tengra.* BANGLADESH : *Nenga tengra.*

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 19 (6/13); C. 17.

Body elongate, subterete posteriorly. Head depressed, greatest width exceeds its height by 1/3 and 1/6 less by its length, 4·2—4·5; depth 5·0 in total length (2·8 and 4·1 in standard length). Snout 3·5 in head. Eyes 6·0 in head, 2·2 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer, gape of mouth equalling half the length of head. Median longitudinal groove shallow anteriorly and narrow posteriorly, not quite reaching base of occipital process. Occipital process keeled, as broad at its base as long, reaching the narrow crescent shaped basal bone of dorsal. Maxillary barbels reaching posterior third of pectoral, outer mandibulars as long as head. Premaxillary band of teeth villiform, 5 times as long as broad; palatine patch villiform, triangular on each side, approximating superiorly and parallel along median line, separated from the premaxillary band of teeth by a distance 1/2 the depth of premaxillary band of teeth and separated from each other anteriorly by a distance 1/3 the depth of premaxillary band of teeth. Rayed dorsal with a pungent spine as long as head; granulated anteriorly in its lower half, serrated in its upper half and posteriorly with soft terminal prolongations; origin much nearer to snout end than to adipose dorsal origin; adipose dorsal base 1—5 in rayed dorsal base. Pectorals equal to head, low, with a strong pungent spine shorter than dorsal spine, granulated externally and denticulated internally. Pelvics

1·9 in head; origin an eye diamater behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 2·0 in head; origin slightly in advance of adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head; upper lobe the longer; least height of caudal peduncle 3·0 in its length. Lateral line.

Skin smooth; upper surface of head and occipital process studded with coarse granules. Dull yellow, the fins being externally stained with black.

It attains 330 mm. in length; has been found in estuaries and tidal rivers.

Distribution.—India : the Hooghly at Calcutta, W. Bengal. Bangladesh.

301. **Tachysurus parvipinnis** (Day)

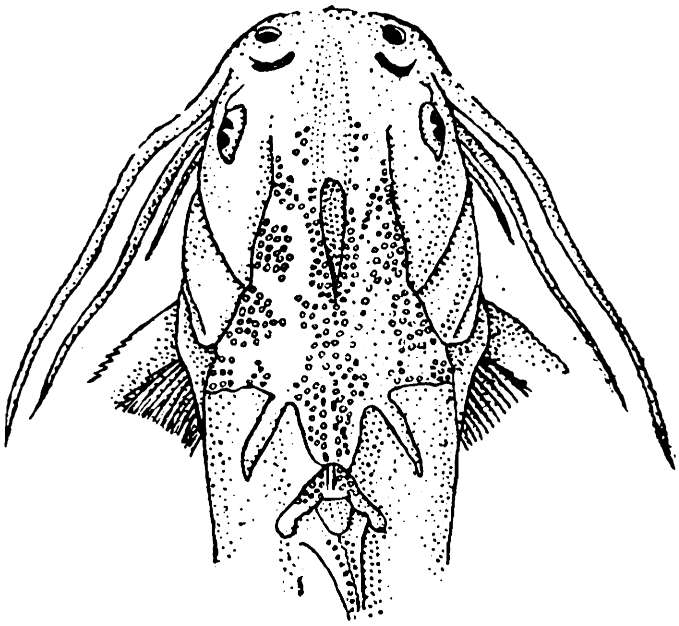
(Text-fig. 8)

1877. *Arius parvipinnis* Day, *Fish. India,* p. 460, pl. 113, fig. 1 (type locality : Coromandel coast).

1889. *Arius parvipinnis* Day, *Fauna Brit. India,* Fish., **1,** p. 177.

1890. *Arius parvipinnis* Vinciguerra, *Pesci di Birmania,* p. 110 (Rangoon).

1954. *Tachysurus parvipinnis* Chandy, *Rec. Indian Mus.,* **51,** p. 11, pl. 2, fig. 7, text-fig. 2 b.



TEXT-FIG. 8.—Dorsal view of head of *Tachysurus parvipinnis* (Day) (After M. Chandy)

B. 6; D.1/7/0; P. 1/10; V. 6; A. 19(5/14); C. 18.

Body elongate, subterete posteriorly. Head depressed, greatest width equalling its length behind nostrils and exceeding its height by 1/4, 4·7; depth 6·0 in total length. (3·6 and 4·3 in standard length). Snout 3·5 in head. Eyes in the anterior half of head, 1·6 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer, gape equal to postorbital length of head. Median longitudinal groove, well marked, lanceolate, deep posteriorly, not reaching base of occipital process. Occipital process with granulated keel along its centre, as long as wide, reaching a narrow, crescentic basal bone of dorsal. Maxillary barbels long, reaching the end of pectoral fin. Premaxillary band of teeth villiform, 8 times as long as broad; palatine patch with villiform teeth, pear-shaped or crescentic on each side, placed well forward, diverging with its small anterior end, separated from the premaxillary band of teeth by a distance 1/7 of its length and separated from each other by a distance 1/12 of its length anteriorly and equal to its length posteriorly. Rayed dorsal 1·2 times of head length, with a pungent, strong spine, as long as head behind the angle of mouth, laterally roughened, serrated anteriorly in the upper half and also posteriorly; origin slightly nearer to snout end than to adipose dorsal origin; adipose dorsal base 2·0 in rayed dorsal base. Pectorals low, with a pungent spine equal to head and the dorsal spine, serrated on both edges, reaching 2/3 of the distance to the pelvics. Pelvics 2·0 in head, not reaching anal; origin 1/2 an eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1—5 in head; origin 1—3 eye diameters before adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, upper lobe the longer nearly equal of head; least height of caudal peduncle 1·8 in its length. Lateral line.

Skin smooth; upper surface of head and occipital process studded with coarse granulations. Upper surface dull laden, sides and abdomen whitish; adipose dorsal with a black blotch; pectorals, pelvics and outer half of anal dark.

It attains 160 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India : Coromandel coast, Orissa coast. Burma : Rangoon.

302. **Tachysurus platystomus** (Day)
(Text-fig.9)

1877. *Arius platystomus* Day, *Fish. India,* p. 464, pl. 107, fig. 3 (type locality : Canara; type is in the Zoological Survey of India, Calcutta).

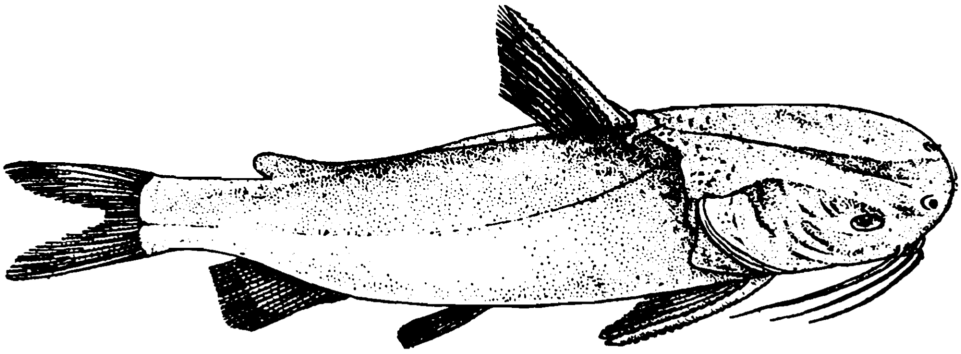
1889. *Arius platystomus* Day, *Fauna Brit. India.* Fish., **1,** p. 183.

1933. *Arius platystomus* Sorley, *Mar. Fish. Bombay Presc.,* p. 160.

Arius platystomus Chandy, *Rec. Indian Mus.,* **51,** p. 11, text-fig. 1 *d* (error in spelling).

1955. *Pseudarius platystomus* Munro, *Mar. Freshwater Fish. Ceylon,* p. 54. (sea and estuaries of Ceylon).

Vernacular name.—INDIA : *Khadapi shingala,* Marathi.



TEXT-FIG. 9.—*Tachysurus platystomus* (Day) (After F. Day)

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 19(5/14); C. 17.

Body elongate, subterete posteriorly. Head depressed, greatest width equalling its length behind nostrils, wider than high, 3·5—4·0; depth 5·0—5·2 in total length (3·0 and 4·2 in standard length). Snout 2·4 in head.

Eyes in anterior half of head, 7 ·0 in head, 2 ·0 in snout, 4 ·0 in interorbital. Mouth inferior, upper jaw longer, gape equalling 4/7 of head. Median longitudinal groove narrow, posteriorly just reaching the occipital process. Occipital process strongly keeled, longer than wide at its base, with a straight lateral edges, reaching the narrow S-haped basal bone of dorsal. Maxillary 'barbels reaching just beyond pectoral base, outer mandibulars shorter. Premaxillary band of teeth villiform, 6 times as-long as broad; palatine patch with conical teeth, pyriform in shape on each side, rather longer than broad, placed well forwards, larger anteriorly and converging, with the interspace equalling 2/3 eye diameter and separated from the premaxillary by a distance nearly half or 3/4 of its length and from each other by a distance 1/2 its length. Rayed dorsal 1 ·4 in head, with a strong spine as long as head minus snout, anteriorly with its upper half serrated superiorly and its lower half roughened and serrated posteriorly; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base nearly equal to rayed dorsal base. Pectorals low, 1 ·4 in head, with a pungent spine slightly longer than dorsal spine, serrated externally in its anterior half, roughened in its posterior half and denticulated internally, reaching 3/4 of the distance to pelvics. Pelvics 2 ·1 in head, just reaching anal; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1 ·9 in head; origin nearly opposite to adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, 1 ·6 in head; least height of caudal peduncle 1 ·2 in its length. Lateral line.

Skin smooth, a few scattered granulations on the posterior part of head and occipital process. Bluish along back becoming lighter on sides and below; dorsal, pectorals, pelvics with a slight tinge of grey.

It attains 150 mm. in length; has been found in seas and estuaries.

Distributions.—India : Bombay, Maharashtra, Canara, Mysore, Malabar, Kerala, Madras, Bay of Bengal, the Hooghly at its mouth. Sri Lanka.

303. Tachysurus sagor (Hamilton)

(Text-fig. 10)

1822. *Pimelodus sagor*, Hamilton, *Fish. Ganges*, pp. 169, 176 (type locality : estuaries of Bengal).

1839. *Bagrus sondaicus* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 444 (type locality : Straits of Sunda).

1839. *Bagrus javensis* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 445 (type locality : Java).

1839. *Bagrus doroides* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 418 (type locality : Pondicherry).

1864 *Arius sagor* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 141 (teeth and occiput).

1864. *Arius deroides* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 142 (Bengal ; Pondicherry).

1877. *Arius sagor* Day, *Fish. India*, p. 461, pl. 105, fig. 1 (the specimen, figured 9 inches in length was from Calcutta).

1889. *Arius sagor* Day, *Fauna Brit. India*, Fish., **1**, p. 178.

1890. *Hexanematichthys sagor* Ogilby, *Proc. Linn. Soc. New* South Wales, **23**, p. 35 (Burma).

1913. *Arius sagor* Weber & de Beaufort, *Fish. Indo-Austral. Archi pel.*, **2**, p. 289, fig. 115 (teeth) (Java : Sumatra; Banka; Borneo; Singapore).

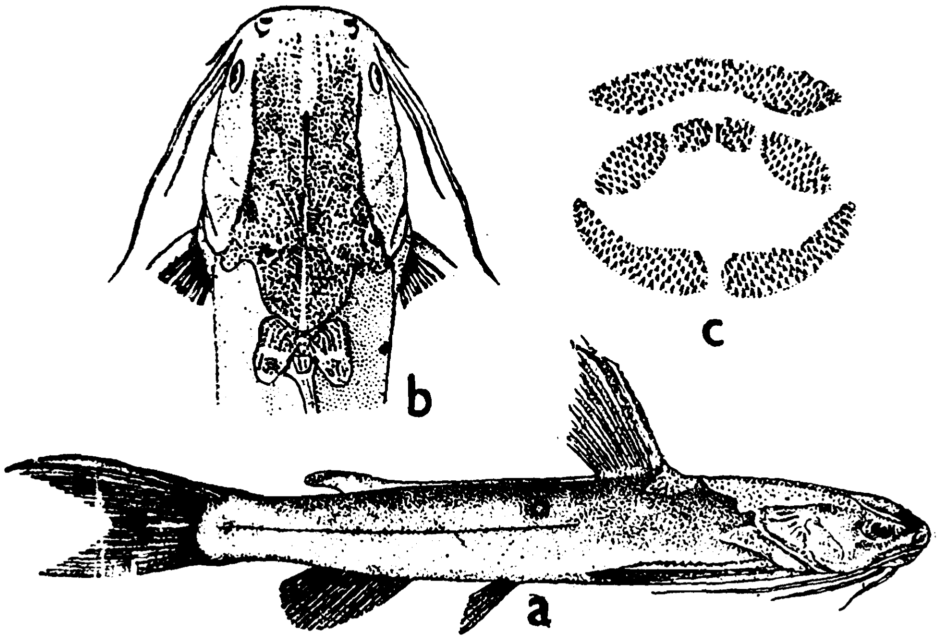
1933. *Arius sagor* Sorley, *Mar. Fish. Bombay Pres.*, p. 160.

1941. *Tachysurus sagor* Fowler, *Bull. U. S. nat. Mus.*, (100) **13** p. 761.

1945. *Tachysurus sagor* Smith, *Bull. U.S. nat. Mus.*, 188, p. 413 (Thailand).

1949. *Tachysurus sagor* Hora, *Rec. Indian Mus.*, **46**, p. 68.

1954. *Tachysurus sagor* Chandy, *Rec. Indian Mus.*, **51**, p. 11, pl. 2, fig. 5; pl. 3, fig. 8.



Text-fig. 10.—*Tachysurus sagor* (Ham.) (*a*) Lateral view (After F. Day) (*b*) Dorsal view of head (*c*) Dentition (After M. Chandy)

Vernacular names.—India : *Billi shede, Gagra, Belli etta; Chivni* Marathi; Standardised name : *Gagra.* Bangladesh : *Gagra.*

B. 6; D. 1/7/0; P. 1./10; V. 6; A. 17-19 (3-4/14-15); C. 15.

Body elongate, subterete posteriorly. Head depressed width equalling its length or a little less, much broader 4·2—4·5; depth 5·0 in the total length (3·9 and 6·1 in standard length). Snout 4·2 in head. Eyes in anterior half of head, 6·5—7·0 in head, 2·0 in snout, 3·5 in interorbital. Mouth inferior, upper jaw longer, gape of mouth equalling half the length of head. Median longitudinal groove shallow, extending to a little behind posterior edge of eye, not reaching to the occipital process. Occipital process 1½ times wider at its base than long, with its posterior extremity rounded, reaching the large butterfly shaped basal bone of dorsal. Maxillary barbels reaching the middle or end of pectoral spine, the outer mandibulars to its base or middle. The premaxillary band of teeth villiform, 5 times as long as broad; vomero-palatine on each side with villiform teeth, oval transversely placed, confluent with each other or slightly separated or distinct, meeting or not meeting medially; vomerine patch separated from the premaxillary band by a distance equal to its length; palatine patch separated from each other posteriorly by a distance twice to thrice the length of vomerine patch. Rayed dorsal higher than body, with a pungent spine as long as head minus snout, granulated or serrated anteriorly, serrated posteriorly; origin nearly midway between snout end and adipose dorsal origin; adipose dorsal base nearly equal to rayed dorsal base. Pectorals low, equal to head, with a strong spine as long as dorsal spine, serrated externally along its outer fourth andd enticulated internally, often with terminal prolongation. Pelvics 2·0 in head, almost reaching anal origin; origin 1·5 eye diameters behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin nearly opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, upper lobe slightly longer, equal to head, 5·6 in total length; least height of caudal peduncle 2·2 in its length. Lateral line often with a few ossified plates along its anterior portion.

Skin smooth; upper surface of head granulated in radiating lines. Greenish brown above, lighter below often with narrow vertical band of spots on body, fins tinged with dark.

It attains 915 mm. in length; has been found in seas, estuaries and tidal rivers.

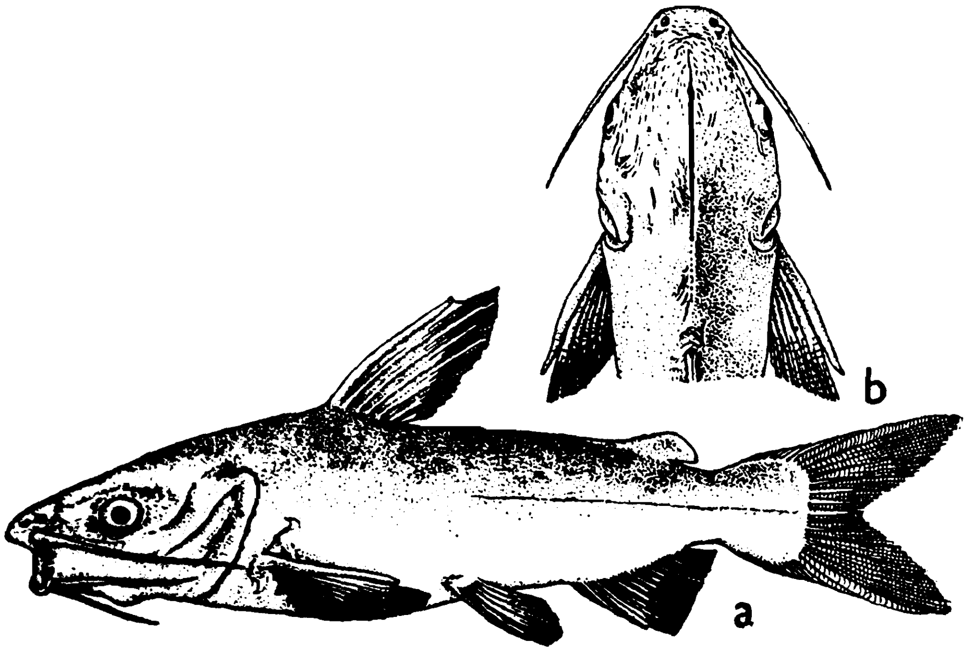
Distribution.—India : Bombay, Maharashtra, Pondicherry, estuaries of W. Bengal, Sagor I., Calcutta, W. Bengal. Pakistan. Bangladesh. Burma-Malaya, Singapore, Thailand, Sumatra, Java. Borneo, Banka; in the latitudinal and longitudinal range of 11° 56′—24° 57′ N., 67° 4′—96° 13′ E., in the Indian region and 5° 25′ N.,—6° 12′ S., beyond Indian region.

304. **Tachysurus satparanus** (Chaudhuri)

(Text-fig. 11)

1916. *Arius satparanus* Chaudhuri, *Mem. Indian Mus.*, **5**, p. 430, figs. 6—8 (type locality : channel between Satpara and Barnikuda; type is in the Zoological Survey of India, Calcutta).

1954. *Tachysurus satparanus* Chandy, *Rec. India Mus.*, 51, p. 11, pl. 1, fig. 3.



TEXT-FIG. 11.—Dorsal and lateral view of *Tachysurus satparanus* (Chaudhuri) (After M. Chandy)

B. 6; D. 1/6/0; P. 1/10; V. 6; A. 19.

Body elongate, subterete posteriorly. Head depressed, broader than high. 3·7; depth 4·3 in total length (3·2 and 3·8 in standard length). Snout 2·7 in head. Eyes 5·0 in head, 2·5 in snout, 3·5 in interorbital. Mouth inferior, gape of mouth 1/3 of the length of head. Median longitudinal groove narrow, short, starting from behind nostrils, reaching the occipital process. Occipital process keeled, reaching the basal bone of the dorsal. Maxillary barbels just reaching pectoral base, outer mandibulars as long as interorbital, inner mandibulars as long as snout. Premaxillary bard of teeth villiform interrupted in the middle, 5 times as long as broad; palatine patch with granular teeth, oval on each side, far backward from the roof of mouth, separated from the premaxillary band of teeth by a distance 1·3 times its length and parallel medianaly, narrowly separated from each. Rayed dorsal equal to depth of body, with a pungent spine 1·4 in head, granulated anteriorly serrated posteriorly;

origin nearer to adipose dorsal origin than snout end; adipose dorsal base nearly equal to rayed dorsal base. Pectorals low, 1 ·3 in head, with a pungent spine slightly less than dorsal spine, 1 ·4 in head, serrated on both edges. Pelvics 1 ·8 in head, reaching anal origin; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 2 ·0 in head; origin slightly before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1 ·2 in head, 4 ·8 in total length; least height of caudal peduncle 1 ·5 in its length. Lateral line. Gill rakers short, 15.

Skin smooth; occipital process granular rugose. Upper surface dark brown tinged with blue, lower surface of sides and abdomen dull white; margins of dorsal and caudal black (in spirit).

It attains 210 mm. in length; has been found in tidal lake.

Distribution.—Channel between Satpara and Barnikuda, Chilka lake, Orissa.

305. **Tachysurus serratus** (Day)

(Text-fig. 12)

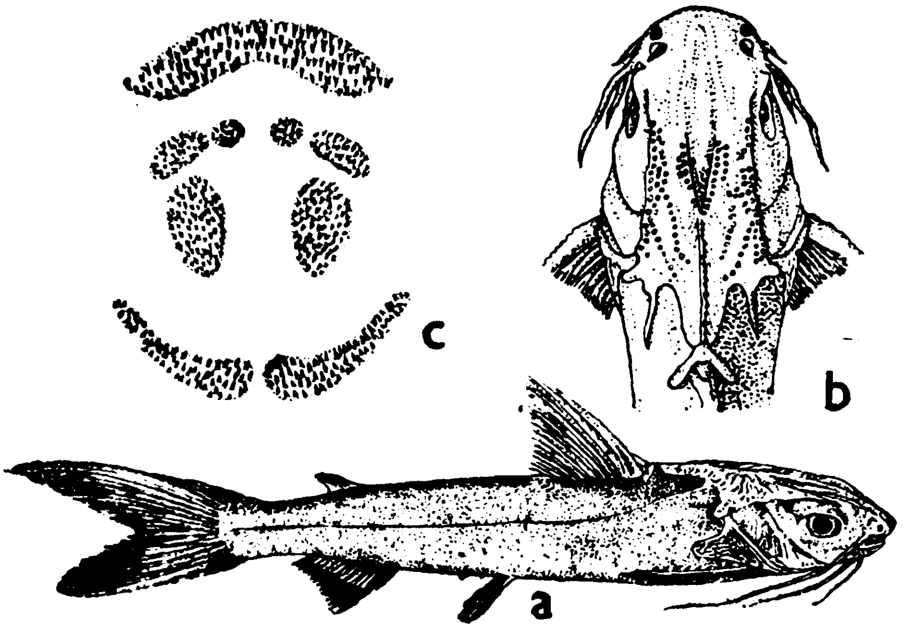
1877. *Arius serratus* Day, *Fish. India*, p. 462, pl. 105, fig. 3 (type locality : Sind; the type is in the Zoological Survey of India, Calcutta; the specimen figured life-size was from Sind).

1889. *Arius serratus* Day, *Fauna Brit. India*, Fish., **1**, p. 180.

1954. *Tachysurus serratus* Chandy, *Rec. Indian Mus.*, **51**, p. 12, pl. 2, fig. 6.

1955. *Arius serratus* Anonymous, *Mar. Fish. Karachi, Sind & Makran*, p. 20.

1955. *Netuma serratus* Munro, *Mar. Freshwater Fish. Ceylon*, p. 54 (Ceylon).



TEXT-FIG. 12.—*Tachysurus serratus* (Day) (*a*) Lateral view (After F. Day) (*b*) Dorsal view of head (*c*) Dentition (After M. Chandy)

Vernacular name.—PAKISTAN : *Khagga.*

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 16 (5/11); C. 17.

Body elongate, subterete posteriorly. Head depressed, greatest width equalling its length behind angle of mouth, 4·7—5·2; depth 5·7—6·7 in the total length (3·6 and 5·2 in standard length. Snout 4·0 in head. Eyes 4·5 in head 1·2 in snout, 2·0 in interorbital. Mouth inferior, upper jaw longer, gape equalling half of length of head. Median longitudinal groove wide, not reaching above the hind edge of opercle, posteriorly forming a serrated ridge continued along the occipital process. Occipital process with serrated keel, a little longer than wide at its base, reaching the narrow crescent shaped basal bone of dorsal. Maxillary barbels reaching middle of pectoral, outer mandibulars to the gill opening. The premaxillary band of teeth villiform, 5·5 times as long as broad; vomero-palatine patch with villiform teeth in 3 distinct patches on either side; the vomerine teeth in 2 round small patches with an interspace between them, the vomerine patches separated from the premaxillary band of teeth by a distance equal to the width of the latter and separated from each other by a distance less than the length of vomerine patch posteriorly a single palatine patch on either side larger than vomerine patch separated from the vomerine patch by a distance less than the length of vomerine patch and separated from each other by a distance equal to the length of vomerine patch. Rayed dorsal higher than body with a spine, as long as head behind the middle of eyes, serrated on both edges, with a soft termination; origin nearer to snout end than to the adipose dorsal origin; adipose dorsal base 1/2 of rayed dorsal base. Pectorals low, 1·2 in head reaching half way to pelvics, with a strong spine not so long as dorsal spine, externally roughened in its lower, serrated in its outer half, denticulated internally. Pelvics 2·0 in head, not quite reaching anal origin; origin about an eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal 2·0 in head; origin about 1/2 an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, upper lobe slightly longer, 1·2 times head, 4·2 in the total length; least height of caudal peduncle 1·9 in its length. Lateral line.

Skin smooth; upper surface of head granulated or with rough lines, most distinct on occipital process. Upper surface of head copper coloured, shot with gold, sides silvery; fins yellowish , rayed dorsal stained dark in outer half, adipose dorsal spotted black, a white edged dark band along outer half of anal; caudal lobes tipped black.

It attains 125 mm. in length; has been found in seas.

Distribution.—Pakistan : Sind. Sri Lanka.

306. **Tachysurus sona** (Hamilton)

(Text-fig. 13)

1822. *Pimelodus sona* Hamilton, *Fish. Ganges*, pp. 172, 376 (type locality : estuaries of Bengal).

1839. *Bagrus gagorides* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 441 (type locality : Bengal).

1864. *Arius gagorides* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 140 (Calcutta).

1864. *Pimelodus sona* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 143.

1865. *Netuma netuma* (*nec* Valenciennes) Day, *Fish. Malabar*, p. 175.

1877. *Arius sona* Day, *Fish. India*, p. 462, pl. 105, fig. 2 (the specimen, figured 7·5 inches in length was from Bombay).

1889. *Arius sona* Day, *Fauna Brit. India*, Fish., 1, p. 179.

1913. *Arius gagorides* Weber & de Beaufort, *Fish Indo-Austral. Archipel.*, 2, p. 288 (Singapore).

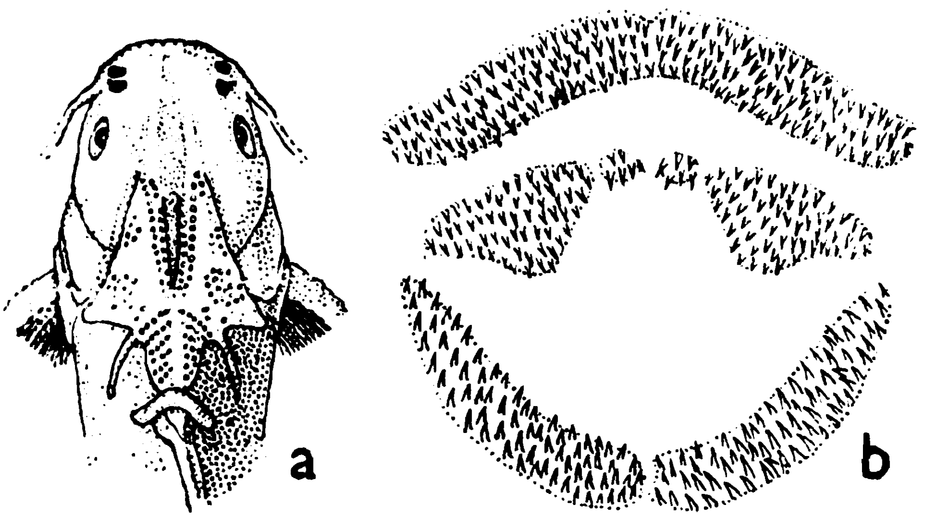
1933. *Arius sona* Sorley, *Mar. Fish. Bombay Presid.*, p. 160 (error in spelling).

1941. *Tachysurus sona* Fowler, *Bull. U. S. nat. Mus.*, (100) 13, p. 762 (India; East Indies ; Polynesia).

1949. *Arius sona* Hora, *Rec. Indian Mus.*, 46 p. 69.

1954. *Tachysurus sona*, Chandy, *Rec. Indian Mus.*, 51 p. 12, pl. 1, fig. 2, pl. 3, fig. 1.

1955. *Hexanematichthys sona* Munro, *Mar. Freshwater Fish. Ceylon*, p. 52. (estuaries and tidal rivers, Ceylon).



TEXT-FIG. 13.—*Tachysurus sona* (Ham.) (*a*) Dorsal view of head (*b*) Dentition (After M. Chandy)

Vernacular names. —INDIA : *Sona tengra*, *Gagra*, *Shingala*, Marathi, *Khago*, Sindhi; Standardised name : *Sona tengra*. PAKISTAN : *Khago*. BANGLADESH : *Sona tengra*.

B. 6; D. 1/7/0; P. 1/12; V 6; A. 17 (6/11); C. 17.

Body elongate, subterete posteriorly. Head depressed $1\frac{1}{2}$ broader than high, as wider as long, 4·0; depth 6·0 in the total length (3·4 and 5·4 in standard length). Snout 4·2 in head. Eyes 5·0—9·0 in head, 1·5—3·0 in snout, 2·5—4·5 in interorbital. Mouth inferior, upper jaw longer, gape equalling 2/3 of head length. Median longitudinal groove wide not extending to the base of occipital; occipital process as wide or wider at its base than long, keeled, convex at its posterior extremity, reaching narrow S-shaped basal bone of dorsal. Maxillary barbel reaching end of head, outer mandibulars shorter. Premaxillary band of teeth villiform, 6 times as long as broad; vomero-palatine patch with villiform teeth in two distinct patches on either side; vomerine patch round, small, separated from palatine patch or connected with it; separated from the premaxillary band of teeth by a distance nearly equal to its length and from each other by a distance nearly equal its width; palatine patch, triangular, emarginate posteriorly, separated from each other posteriorly by a distance equal to its length. Rayed dorsal higher than body with a strong spine as long as head minus snout, granulated anteriorly and serrated posteriorly; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base. Pectorals low, 1·1 in head, reaching nearly half way to pelvics with a strong spine often shorter than dorsal spine, roughened externally sometimes even with serrations near its tip, and serrated internally. Pelvics 1·5 in head, reaching or not reaching anal; origin more than eye diameter behind the last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·5 in head; origin opposite adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, 1·1 in head, 5·9—6·0 in total length; least height of caudal peduncle 1·0 in its length. Lateral line bifurcating at caudal base.

Skin smooth; crown of head, from behind eyes with radiating granulations. Brownish above, bluish dashed with gold on sides dull white beneath; fins with bluish-black tinge; in young brownish above, glossed with purplish and yellow with fins nearly black.

It attains 915 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India : Bombay, Maharashtra, Puri, Orissa, Calcutta, estuaries of W. Bengal. Pakistan. Bangladesh. Sri Lanka.—Malaya, Singapore, Java, Indonesia, Polynesia; in the latitudinal and longitudinal range of 6°—24° 57′ N., 67° 4′—92° 53′ E., in the Indian region and 50° 25′ N.,—12° S., 100°E.—170° W. beyond Indian region.

307. **Tachysurus subrostratus** (Valenciennes)

1840. *Arius subrostratus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 62 (type locality : Malabar).

1840. *Arius rostratus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 63 (type locality : Alleppey).

1877. *Arius subrostratus* Day, *Fish. India*, p. 461, pl. 106, fig. 6 (Malabar coast of India).

1889. *Arius subrostratus* Day, *Fauna Brit. India*, Fish., **1**, p. 178.

1929. *Arius subrostratus* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 359 (Trivandrum).

1954. *Tachysurus subrostratus* Chandy, *Rec. Indian Mus.*, **51**, p. 12.

1955. *Tachysurus subrostratus* Munro, *Mar. Freshwater Fish. Ceylon*, p. 53 (seas, estuaries and tidal rivers, *Ceylon*)

Vernacular names.— INDIA : *Theydoo*, Malayalam. SRI LANKA : *Ura Anguluva*, Singhalese.

B. 6; D. 1/7/0; P. 1/9; A. 17—20 (5-6/12-14); C. 17.

Body elongate, subterete posteriorly. Head depressed, greatest width rather exceeding its height and equals 4/7 of length, 3·3—4·3; depth 5·0—5·8 in the total length (2.3—3·3 and 4·0—4·7 in standard length). Snout elongate, depressed 2·9 head. Eyes 5·0—6·0 in head, 2·5—3.0 in snout, 2·0—2·5 in interorbital. Mouth inferior, upper jawlonger, gape of mouth equalling 2/7 of the length of head. Median longitudinal groove shallow, anteriorly narrow and posteriorly deep, extending to base of occipital process. Occipital process wider than long at its base with straight lateral edges, reaching the narrow basal bone of dorsal. Maxillary barbels short not reaching eve outer mandibulars shorter. Premaxillary band of teeth villiform 5 times as long as broad; palatine patch with villiform teeth on each side equal to eye widely placed, separately from the premaxillary band of teeth by a distance twice its length and from each other by a distance 2·5 times its length. Rayed dorsal higher than body often with a filamentous prolongation in young, with a weak spine, half as long as head, rugose anteriorly, serrated posteriorly; origin midway between snout end and adipose dorsal origin; adipose dorsal base 2/3 of the rayed dorsal base. Pectorals low not reaching pelvics, 1·4 in head with a pungent spine as long as or a little longer than dorsal spine, serrated internally. Pelvics 1·7 in head, reaching anal origin; origin an eye diameter behind last dorsal ray much nearer to anal origin than to pectoral base. Anal 1·6 in head, origin slightly before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head, 6·0—7·0 in total length; least height of caudal peduncle 1·7 in its length. Lateral line, bifurcating at caudal base.

Skin smooth; upper surface of head behind middle of orbit and occipital process granulated. Silvery laden along back when fresh, a series of about 15 minutely spotted ventical bands on body; fin stained with grey.

It attains 305 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India: Malabar, Alleppey, Kerala. Sri Lanka.

308. **Tachysurus sumatranus** (Bennett)

1830. *Bagrus sumatranus* Bennett, *Life Raffles*, p. 691, (type locality : Sumatra).

1840. *Arius venosus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 69 (type locality : Manila).

1846. *Arius micronotacanthus* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 162 (type locality : Batavia).

1846. *Arius manjong* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 164 (type locality : Batavia).

1846. *Arius macruropterygius* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p, 164 (type locality : Batavia).

1846. *Arius micruropterygius* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 164 (type locality : Batavia).

1846. *Arius laeviceps* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 165 (type locality : Batavia).

1864. *Arius sumatranus* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 162, fig. (teeth and occiput).

1864. *Arius venosus* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 159, fig. (teeth).

1877. *Arius sumatranus* Day, *Fish. India.* p. 460, pl. 107, fig. 6.

1889. *Arius sumatranus* Day, *Fauna Brit. India*, .Fish., **1**, p. 176.

1913. *Arius venosus* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 314, fig. 137 (teeth) (Java : Borneo; Madura; Bintaug; Banka; Singapore).

1928. *Tachysurus venosus* Fowler, *J. Bombay nat. Hist. Soc.*, **33**, p. 104 (Bombay).

1941. *Tachysurus venosus* Fowler, *Bull. U. S. nat. Mus.*, (100) **13**, p. 760.

1945. *Tachysurus venosus* Smith, *Bull. U. S. nat. Mus.*, 188, p. 411 (Thailand).

1953. *Arius venosus* Herre, *Check List Philippine Fish.*, p. 132 (Philippines).

1954. *Tachysurus . sumatranus* Chandy, *Rec. Indian Mus.*, **51**, p. 13.

1955. *Tachysurus venosus* Munro, *Mar. Freshwater Fish., Ceylon*, p. 53 (estuaries and tidal rivers, Ceylon).

B. 6; D. 1/7/0; P. 1/10; V. 6; A. 18—23(5-6/13-17); C. 17.

Body elongate, subterete posteriorly. Head depressed greatest width equalling head length minus snout, exceeding its height and equalling its length behind angle of mouth, 4·2—5·1; depth 5·5—6·4 in the total length (3·4—4·4 and 4·4—5·2 in standard length). Snout obtuse 3·5 in head. Eyes with free orbital margin, 4·2—5·0 in head, 1·5—1·7 in snout and 2·0 in interorbital. Mouth inferior, upper jaw longer, gape 1/2 of head length. Median longitudinal groove narrow posteriorly reaching base of occipital process. Occipital process keeled, as broad at its base as long, reaching the V-shaped basal bone of dorsal. Maxillary barbels reaching pectoral base or end of head, outer mandibulars shorter. Premaxillary band of teeth villiform, 5 times as long as broad; palatine patch with villiform teeth, triangular, on each side as long as eye, separated from the premaxillary band by a distance less than its length and from each other by a distance, $\frac{1}{2}$-$\frac{3}{4}$ of its length. Rayed dorsal as high as or slightly higher than body with a strong spine as long as head behind angle of mouth serrated on both edges; origin nearer to snout end than to adipose dorsal origin, adipose dorsal base ½ or ⅔ of rayed dorsal base. Pectorals low not reaching pelvics, equal to head with strong spine, as long as dorsal spine, granulated in front, serrated behind. Pelvics 1.2 in head, reaching anal or ⅔ of the way to anal, origin half eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal equal to head, origin slightly before adipose dorsal origin much nearer to pelvics origin than to caudal base. Caudal forked, equal to head, 5.0-5.2 in total length; least height of caudal peduncle 1·9 in its length. Lateral line.

Skin smooth; upper surface of head with scattered granulations, becoming dense on occipital process. Bluish or bluish green above becoming lighter on sides and beneath; fins edged grey, adipose dorsal greyish.

It attains 313 mm. in length; has been found in seas, estuaries and tidal rivers.

Distribution.—India : Bombay, Maharashtra, Madras, Andamans. Pakistan. Sri Lanka.—Singapore, Thailand, Sumatra, Java, Borneo, Madura, Banka, Manila, Philippines ; in the latitudinal and longitudinal range of 6°—24° 57′ N., 67° 4′—92° 45′ E. in the Indian region and 14° 30′ N.,—6° 12′ S., 101°—121° 30′ E. beyond Indian region.

309. **Tachysurus thalassinus** (Rüppell)
(Text-fig. 14)

1835. *Bagrus thalassinus* Rüppell, *Neue Wirbelth.Fische*, p. 75, pl. 20, fig. 2 (type locality : Massaua, Red Sea).

1839. *Bagrus bilineatus* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 434 (type locality ; Pondicherry ; Rangoon).

1839. *Bagrus netuma* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 438, pl. 417 (type locality: Pondicherry).

1840. *Arius nasutus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 60 (type locality : Malabar; Red Sea).

1846. *Bagrus rhodonotus* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 157 (type locality : Batavia).

1846 *Bagrus carchariorhydchos* Bleeker, *Nat. Gen. Arch. Ned. Ind.* (2)**3**, p. 291 (type locality: Batavia).

1864. *Arius thalassinus* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 139, fig. (teeth and occiput) (Batavia; Singapore; Red Sea).

1865. *Arius thalassinus* Günther, *Fish. Zanzibar*, p. 114 (Aden; Zanzibar).

1870. *Arius andamanensis* Day, *Proc. zool. Soc. London*, p. 699 (type locality : Andaman Is).

1877. *Arius thalassinus* Day, *Fish. India*, p. 463, pl. 104, fig. 4, pl. 106, fig. 1 (the specimen, figured, 11 inches long was from Andamans).

1889. *Arius thalassinus* Day, *Fauna Brit. India*, Fish., **1**, p. 181.

1913. *Arius thalassinus* Zugmayer, *Abh. Bayer Akad. Wiss. mathphys.* kl., **26**, p. 9 (Mekran : Oman).

1913. *Arius thalassinus* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 286, fig. 114 (dentition).

1928. *Netuma thalassina* Fowler, *Mem. Bishop. Mus.*, **10**, p. 62 (Polynesia).

1929. *Netuma thalassina* Mc Culloch, *Mem. Austral. Mus.*, **5**, p. 60 (Queensland : N. W. Australia).

1929. *Arius thalassinus* Pillay, J. Bombay *nat. Hist. Soc.*, **33**, p. 359

1941. *Tachysurus thalassinus* Fowler, *Bull. U.S. nat. Mus.*, (100) **13**, p. 764.

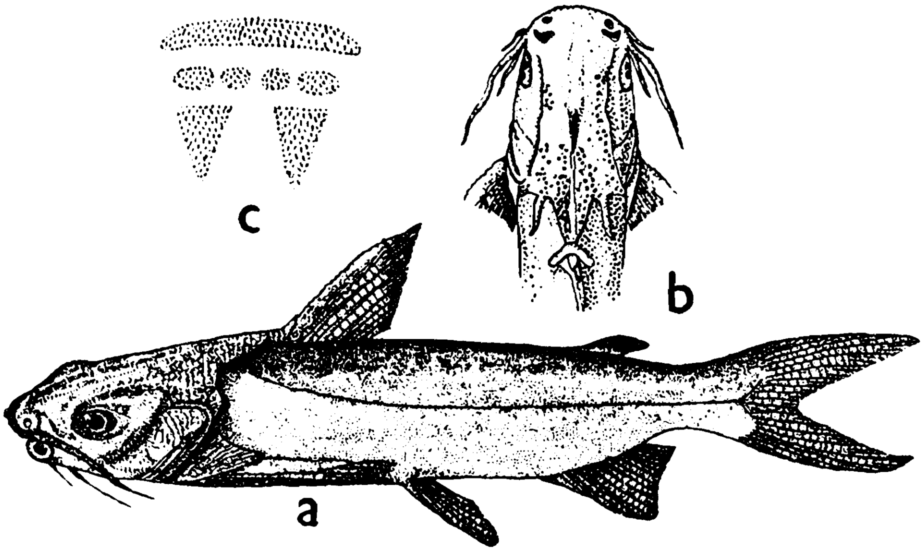
1945. *Tachysurus thalassinus* Smith, *Bull. U.S. nat. Mus.*, **188**, p. 413 (Thailand).

1947. *Tachysurus thalassinus* Misra, *Rec. Indian Mus.*, **45**, p.125 (Baghdad).

1954. *Tachysurus thalassinus* Chandy, *Rec. Indian Mus.*, **51**, p. 15, pl. 1, fig. 4, text-fig. 1 a.

1955. *Netuma thalassinus* Munro, *Mar. Freshwater Fish. Ceylon*, p. 53 (Seas, estuaries and tidal rivers, Ceylon).'

1960. *Tachysurus thalassinus* Menon, *Rec. Indian Mus.*, **54**, p. 148 (Hor-el-Hammar Lake, Iraq).



TEXT-FIG. 14.—*Tachysurus thalassinus* (Rüpp.) (*a*) Lateral view (After F. Day) (*b*) Dorsal view of head (After M. Chandy) (*c*) Dentition (After F. Day)

Vernacular names.—INDIA: *Mandai kalava, Nave etta, Thogadam; Theydoo,* Malayalam. Standardised name: *Nave etta.* SRI LANKA : *Thora anguluva Mudhu anguluva,* Singhalese: *Ven Keleru,* Tamil.

B. 5-6; D.1/7/0; P. 1/11-13; A. 15-18 (3-5/12-13); C. 17

Body elongate, subterete posteriorly. Head depressed, greatest width equalling its length behind angle of mouth, broader than high. 4·2 depth; 5·8 in total length (3·6 and 4·5 in standard length). Snout 3·2 in head. Eyes with free orbital margin, 5·0 in head, 1·0—1·7 in snout, 2·5—3·0 in interorbital. Mouth inferior, upper jaw longer; gape slightly less than half of head length. Median longitudinal groove narrow posteriorly extending to opposite the hind edge of opercle, not reaching the base of occipital process. Occipital process keeled, longer than wide at its base reaching the small crescent shaped basal bone of dorsal. Maxillary barbels nearly reaching pectoral base, outer mandibulars shorter. Premaxillary band of teeth villiform; 8 times as long as broad. Vomero-palatine patch with villiform teeth in 3 groups on each side forming a triangle, two small vomerine patches in front and a large triangular palatine patch behind, the three placed close together. Rayed dorsal as long as depth on body with a strong spine, as long as head minus snout or a little longer, granulated, anteriorly serrated posteriorly; origin slightly near to snout end than adipose dorsal origin; adipose dorsal base 2/5 of rayed dorsal base. Pectorals low, as long as head, reaching pelvics, with a strong spine slightly shorter than dorsal spine, roughened externally, serrated internally. Pelvics 1·6 in head, not reaching anal origin nearly half an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·7 in head; origin slightly before adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal forked, upper lobe slightly larger, nearly equal to head, 5·0 in total length; least height of caudal peduncle 1·5 in its length. Lateral line bifurcated at caudal base.

Skin smooth; upper surface of head and occipital process granulated. Silvery darkest above; upper portion of adipose dorsal black; in some specimen dorsal surface with rich brown granulations appearing to be tipped with gold.

It attains at least 1000 mm. in length; has been found in seas, estuaries, tidal rivers and tidal lakes.

Distribution.—India : Bombay, Maharashtra, Malabar, Kerala, Madras, Pondicherry, Gopalpur, Orissa, Vishakhapatnam, Andhra, Andamans. Pakistan : Mekran. Burma : Rangoon. Shri Lanka.—Massaua, Red Sea, Aden, Zanzibar, Hor-el-Hammer lake, Iraq, Gulf of Oman, Singapore, Thailand, Indonesia, Philippines, China, Japan, North Australia, Queensland, Polynesia; in the latitudinal and longitudinal range of 6°—25°7′,N., 62°20′,—96°13′E., in the Indian region and 34°N.—26°S., 38°30′E.—170°W beyond Indian region.

L. Family BAGRIDAE

Body elongate, subterete, compressed posteriorly. Head conical or broadly round, depressed, osseous or not osseous or rugose with head-shields or granulations or covered with skin. Snout, bluntly pointed or rounded or spatulate, depressed. Eyes large or moderate, lateral, subcutaneous or with free orbital margin. Nostrils wide apart, the posterior with or without nasal barbel (except in genus **Rita** where the anterior subcontiguous with the posterior). 3 or 4 pairs of barbels.Mouth terminal or subterminal, transverse, crescentic upper jaw longer or subequal. Teeth villiform in band in jaws or mixed with molariform in lower jaw; vomerine teeth villiform or molariform in continuous or non-continuous semilunar band. Median longitudinal groove on head present or absent. Occipital process reaching or not reaching basal bone of dorsal. Separate interneural shield present or absent. Humero-cubital process short or much elongated. Gill openings wide or moderate; gill membranes free or united with the isthmus. Rayed dorsal with a strong or feeble spine. An adipose dorsal. Pectorals low, with a strong or moderate spine, highly placed or horizontal. Pelvics low, horizontal or normal with 6—8 rays. Anal with 9—28 rays. Caudal lunate or forked. Lateral line. Air bladder not enclosed in bone. Branchiostegals 6—13.

The family BAGRIDAE is represented by four genera in the Indian region.

Key to genera of family BAGRIDAE*

1. Eyes subcutaneous ; barbels 6	3
2. Eyes not subcutaneous ; barbels 8	5
3. Dorsal and pectoral spines stout and firm ; palatine teeth molariform	**Rita**
4. Dorsal and pectoral spines neither stout nor firm ; palatine teeth villiform	**Rama**
5. Anal rays less than 20 ; anal base less than or equal to adipose dorsal base	**Mystus**
6. Anal rays 20 or more than 20; anal base longer than adipose dorsal base (extra—limital species excluded)	**Pseudobagrus**

134. Genus **Mystus** Scopoli

1763. *Mystus* Gronov., *Zooph. Zoophyl. Gronov. Animal.*, p. 124 (type, *Silurus pelusius* Solander-*Bagrus halepensis* Heckel; the generic names of Gronow have been, however, formally accepted by the International Commission of Zoological Nomenclature; the eligibility of the generic names of Gronow is questioned as not conforming to the Linnean Code in the terminology of species; inadmissible according to Opinion 89 of the International Commission of Zoological Nomenclature).

1777. *Mystus* Scopoli, *Introd. nat. Hist.*, p. 451 (type, *Silurus pelusius* Solander).

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*Jayaram (1971, *Int. Revue ges. Hydrobiol.*, 57(5), p. 816) established a new genus *Chandramara* for the reception of *Pimelodus chandramara* Hamilton, 1822).

1856. *Macrones* (*nec* Newman, 1841) Dumeril, *Mem. Acad. Sci. Paris*, **27** p. 484 (type, *Bagrus lamarii* V., orthotypic).

1862. *Hemibagrus* Bleeker, *Atl. Ichth. Ind. Orient. Neerl.*, **2**, p. 9 (type, *Bagrus nemurus* V., orthotypic).

1862. *Aspidobagrus* Bleeker, *All. Ichth. Ind. Orient. Neerl.*, 7, p. 9 (type, *Bagrus gulio* Ham. orthotypic).

1862. *Hypselobagrus* Bleeker, *Atl. Ichth. Ind. Orient. Neerl.*, **2**, p. 10 (type, *Bagrus macronema* Blkr., orthotypic).

1919. *Aoria* Jordan, *Proc. Acad. nat. Sci. Philad.* **70**, p. 341 (type, *Bagrus lamarii* V., orthotypic; name preoccupied in Coleoptera, inadmissible).

1937. *Brachymystus* Fowler, *Proc. Acad. nat. Sci. Philad.*, **89**, p. 148 (type, *Bagrus nemurus* V., orthotypic).

1939. *Sperata* Holly, *Zool. Anz.*, **125**, p. 43 (type, *Silurus vittatus* Bl.).

1939. *Aorichthys* Wu, *Sinensia*, **10**, p. 131 (type, *Bagrus lamarii* V.).

1940. *Macronichthys* White & Thomas, *Ann. Mag. nat. Hist.*, **5**, p. 505 (type, *Bagrus lamarii* V.).

1954. *Osteobagrus* Jayaram, *Rec. Indian Mus.*, **51**, pp. 529, 548 (type, *Pimelodus aor* Ham., orthotypic).

Body elongate, subterete, compressed posteriorly; head depressed, rugose or smooth covered by thin skin, with median longitudinal groove. Snout spatulate, round or depressed. Mouth terminal transverse; upper jaw slightly longer, cleft of mouth not extending to orbit. Nostrils small in 2 pairs, wide apart. Eyes with free orbital margin, above angle of mouth. 8 barbels. Teeth in a villiform band in jaws; continuous or non-continuous semiluminar vomerine band. Distinct separate interneural shield present or absent. Gill openings wide; gill membrane overlapping isthmus and free from it. Rayed dorsal with a serrated spine. Adipose dorsal. Pectorals low with a serrated spine. Pelvics with 6 rays; origin below or behind end of last dorsal ray. Anal with 9—15 rays. Caudal forked. Air bladder moderate or large, attached to the undersurface of the bodies of anterior vertebrae. Axillary pore present or absent. Branchiostegals 6—13.

Distribution.—Aleppo, Syria, Red Sea, Arabia, Zanzibar, Iraq, Gulf of Oman, Mekran, Pakistan, India, Bangladesh, Burma, Sri Lanka, Malaya, Singapore, Thailand, Indonesia, New Guinea, Philippines, China, Japan, Formosa, North Australia, Queensland and Polynesia.

The genus **Mystus** is represented by two subgenera in the Indian region.

Key to subgenera of genus **Mystus** Scopoli

1. A distinct separate interneural shield	**Aorichthys**
2. No distinct separate interneural shield	**Mystus**

xvii. Subgenus **Aorichthys** Wu*

A distinct interneural shield present

Key to species of subgenus **Aorichthys** Wu

1. Snout spatulate	3
2. Snout normal	*Mystus* (*A.*) *leucophasis*
3. Adipose dorsal origin close behind last dorsal ray, base 3·4 times rayed dorsal base, extending to caudal base	*Mystus* (*A.*) *rufescens*
4. Adipose dorsal origin about 2 eye diameters behind last dorsal ray ; base equal to or slightly longer than rayed dorsal base, extending opposite to last anal ray	5
5. Maxillary barbel extending beyond caudal base ; gape of mouth 2·3—2·5 in head; a black spot of the size of eye on the posterior and inferior portion of adipose dorsal	*Mystus* (*A.*) *aor*
6. Maxillary barbels extending to pelvics ; gape of mouth 3·0 in head; a black spot less than ½ eye diameter at the posterior end of the base of adipose dorsal	*Mystus* (*A.*) *seenghala*

310. **Mystus (Aorichthys) aor** (Hamilton)

1822. *Pimelodus aor* Hamilton, *Fish. Ganges*, pp. 205, 379, pl. 20, fig. 68 (type locality : rivers of Bengal and Upper parts of Gangetic estuaries).

1877. *Macrones aor*, Day, *Fish. India*, p. 444 (throughout Sind and India to Burma).

1889. *Macrones aor*, Day, *Fauna Brit. India*, Fish., **1**, p. 149.

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*Jayaram (1972, *Proc. zool. Soc.*, Calcutta, **24** : 149-156) has raised *Aorichthys* Wu to the rank of a genus based on osteological evidences and considers *aor* Hamilton and *seengala* Sykes only under this genus, and has presented a key to their separation.

1890. *Macrones aor* Vinciguerra, *Ann. Mus. Stor. Nat. Genova,* (2) **9**, pt. 2, p. 217 (Mandalay).

1910. *Macrones aor* Jenkins, *Rec. Indian Mus.*, **5**, p. 140. (Monghyr).

1936. *Aoria aor* D' Abreu, *Rec. Nagpur Mus.*, **9**, p. 38 (the Nerbudda, Tapti and Wainganga rivers).

1937. *Mystus aor* Hora, *Rec. Indian Mus.*, **39**, p. 19 (the Cauvery, Coorg State).

1940. *Mystus aor* Hora, *Rec. Indian Mus.*, **42**, p. 368 (Mahanadi river, M.P.).

1948. *Mystus aor* Hora, *Rec. Indian Mus.*, **46**, p. 72 (Sind, U.P., Bihar, C.P., Bengal, Mahanadi river, Orissa, Coorg State, Indawgyi Lake, U. Burma).

1954. *Mystus (Osteobagrus) aor* Jayaram, *Rec. Indian Mus.*, **51**, p. 548, text-fig. 10.

1954. *Macrones aor* Chacko, Srinivasan & Ramachandran, *Contri. Fish. Stn., Ennore, Madras State,* No. 1, appendix 3, p. 11 (the Vellar estuary, Porto Novo).

1955. *Mystus aor* Chacko, Kurian & Thyagarajan, *Contri. Fresh Water. Fish. Biol* Stn., No. 12 (the Cauvery river).

1955. *Mystus aor* Job, David & Das, *Indian J. Fish.*, **2**, p. (within the Hirakud stretch).

Vernacular names.—INDIA : *Air*, Bengal; *Alli, Addi,* Oriya : *Seengala, sang-go-ah,* E. Punjab; *Cumboo Kellatee,* Tamil; *Mukul jellah,* Telegu; *Tengra,* U.P.; Standardised name : *Kantia.* PAKISTAN : *Singharee,* Sind; *Seengala, Sung-go-ah.* BURMA : *Nga-joung, Nga-uey.*

B. 12; D. 1/7/0; P. 1/9-10; V 6; A. 11—13(3-4/8-9); C. 17.

Body elongate, compressed. Head depressed width 3/5 of its length, 4·5—5·0; depth 6·5—7·5 in total length. Snout broad depressed, spatulate. Eyes 4·5—8·0 in head, 1·5—3·0 in snout, 1·5—2·0 in interorbital. Mouth terminal, transverse, upper jaw the longer; width of gape 2·3—2·5 in head. Maxillary barbels reaching beyond base of caudal fin, outer mandibulars to base of pectoral, inner mandibulars shorter, nasals half way to orbit. Median longitudinal groove reaching to the base of occipital process; occipital process reaching to interneural shield, wider than occipital process, and twice as long as broad, reaching the basal bone of dorsal. Teeth in villiform band in jaws; vomerine teeth villiform, in crescentic, continuous band. Rayed dorsal with a weak spine, nearly equal to head, finely serrated with 4-5 teeth internally, adipose dorsal base equalling or slightly longer than the rayed dorsal base; interdorsal 2·0 in rayed dorsal. Pectorals low, not reaching pelvics, equalling head minus snout, with a strong rough spine, 1·6—2·0 in head, finely serrated anteriorly and denticulated posteriorly. Pelvics not reaching anal; origin opposite the last dorsal ray. Caudal forked with pointed lobes, the 3 or 4 rays of upper lobe being produced. Lateral line.

Skin smooth; upper surface of head rugose with tuberculated ridges. Bluish laden above, becoming white below; a black spot of the size of eye on the posterior and inferior portion of adipose dorsal.

It attains 915 mm. in length; has been found in freshwater and estuaries.

Distribution.—India : U.P., Monghyr, Bihar, Mahanadi Narmada, Tapti, Wainganga, M.P., the Cauvery, Mysore, Porto Novo, Madras, Hirakud stretch, Orissa, rivers and estuaries or W. Bengal. Pakistan : Sind. Bangladesh. Burma : Mandalay, Indawgyi lake, Upper Burma.

311. **Mystus (Aorichthys) leucophasis** (Blyth)

1860. *Bagrus leucophasis* Blyth, *J. As. Soc. Bengal*, **29**, p. 148 (type locality : the Sittang, Burma).

1864. *Macrones leucophasis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 78.

1877. *Macrones leucophasis* Day, *Fish. India*, p. 449, pl. 100, fig. 2. (rivers of Burma; the specimen figured, life-size, was from Bassein).

1889. *Macrones leucophasis* Day, *Fauna Brit. India*, Fish., **1**, p. 158.

1929. *Aoria leucophasis* Prashad & Mukerji, *Rec. Indian. Mus.*, **31**, p. 179 (The Indaw and the Nam Tin rivers, Myitkyina District).

1954. *Mystus (Osteobagrus) leucophasis* Jayaram, *Rec. Indian Mus.*, **51**, p. 550.

Vernacular names.—BURMA : *Nga-pet-lek, Nga-nouk-thawa; Nga pulley* or *pailey* at Moulmein.

Body elongate, compressed. Head depressed, width equal to head behind the nostrils, 4·5—5·0; depth 4·5 in total length (3·3—4·2 and 4·0 in standard length), Snout 3·0 in head. Eyes with free orbital margin, 3·5—5·0 in head, 1·5—2·0 in snout, 1·0—1·3 in interorbital. Mouth terminal transverse, upper jaw longer; gape less than 3·0 in head. Maxillary barbels reaching the end of anal, outer mandibulars to a little beyond middle of pectoral, inner mandibulars to gill-opercle, nasals to anterior orbit or mid-orbit. Median longitudinal groove not quite reaching base of occipital process; occipital process twice as long as broad reaching to the pyriform interneural shield, twice as long as broad, not as broad as occipital process, the latter meeting basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic continuous band. Rayed dorsal higher than depth of body with a spine as long as head behind nostrils or angle of mouth, serrated internally in its upper fourth; origin much nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·3 times rayed dorsal base, extending half eye diameter behind last anal ray; interdorsal 4·6 in adipose dorsal base. Pectorals not reaching pelvics, low, equal to head with a strong spine, a little shorter than dorsal spine, serrated internally. Pelvics not reaching anal, 1·5 in head; origin below 5th—6th dorsal ray, nearer to anal origin than to pectoral base. Anal equal to or 1·1 in head; origin below middle of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal forked, 1·5 times head, 3·3—4·5 in total length, upper lobe the longer, filamentous; least height of caudal peduncle 1·4 in its length. Lateral line.

Skin smooth; upper surface of head rugose. Purplish black with whitish dots on body.

It attains 125 mm. in length; freshwater rivers.

Distribution.—the Sittang, the Indaw and the Nam Tin rivers, Myitkyina Dt., Bassein, Burma.

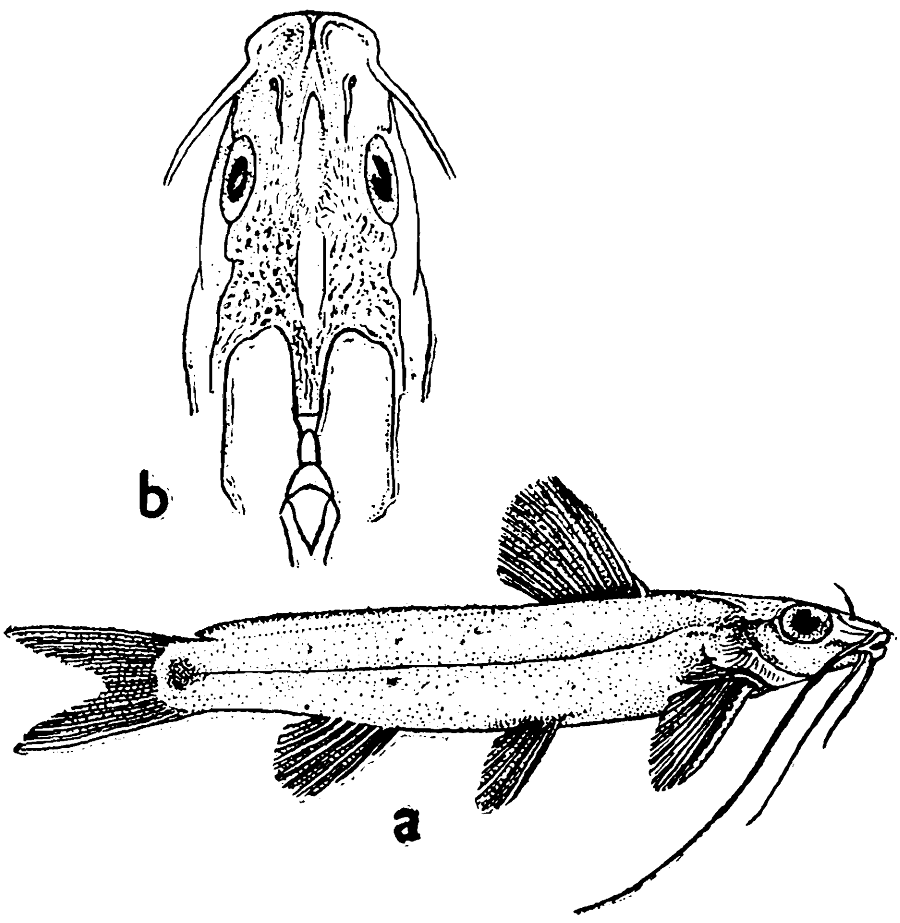
312. **Mystus (Aorichthys) rufescens** (Vinciguerra)

(Text-fig. 15)

1890 *Macrones rufescens* Vinciguerra, *Pesci di Birmania*, pp. 89, 98, pl. 7, fig. 2 (type locality : Meetan, Burma).

1890. *Macrones rufescens* Vinciguerra, *Ann. Mus. Stor. Nat. Genova*, (2) **9**, p. 226.

1954. *Mystus* (*Mystus*) *rufescens* Jayaram, *Rec. Indian Mus.*, **51**, p. 552.



TEXT-FIG. 15.—*Mystus* (*Aorichthys*) *rufescens* (Vinciguerra) (*a*) Lateral view (*b*) Dorsal view of head (After D. Vinciguerra)

B. 12; D. 2/7/0; P. 1/8; V 6; A. 11 (3/8); C. 24.

Body elongate, compressed. Head depressed, 5·3; depth 7·0 in total length (4·3 and 5·8 in standard length). Snout spatulate, 3·1 in head. Eyes 3·0 in head, 1·1 in snout, 1·0 in interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching end of pelvics, outer mandibulars to middle of pectoral, inner mandibulars to pectoral base, nasals to anterior margin of orbit. Median longitudinal groove reaching occipital process, twice as long as broad at its base; occipital process reaching interneural bone the latter meeting the basal bone of dorsal. Teeth villiform, in band in jaws; vomerine teeth villiform in crescentic, continuous band. Rayed dorsal 1·3 times depth of body, wih a spine 1·3 lin head roughened externally, serrated internally; origin much nearer to adipose dorsal than to snout end; adipose dorsal base 3·4 times rayed dorsal base, extending 1·7 eye diameters behind last anal ray, almost touching caudal fin. Pectorals low not reaching pelvics, 1·1 in head, with a spine serrated internally. Pelvics not reaching anal, 1·3 in head; origin below last dorsal ray, almost midway between pectoral base and anal origin. Anal 1·3 in head; origin hatf eye diameter before middle adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal forked 1·1 times head, 5·0 in total length, lobes subequal; least height of caudal 1·7 in its length. Lateral line.

Skin smooth; upper surface of head rugose. Body rufescent; humeral and caudal blackish; a black spot at the caudal base.

It attains 74 mm. in length; has been found in freshwater.

Distribution.—Meetan, Burma.

313. **Mystus (Aorichthys) seenghala** (Sykes)

(Text-fig. 16)

1838. *Platystoma seenghala* Sykes, *Proc. zool. Soc., Lond.,* part **6**, p. 164.

1839. *Bagrus lamarrii* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 407, pl. 145.

1841. *Platystoma seenghala* Sykes, *Trans. zool. Soc. London,* **2**, p. 371, pl. 15, fig. 2 (type locality : Mota Mula river, Poona).

1849. *Bagrus seenghala* Jerdon, *Madras, J. Lit. Sci.*, **15**, pt. 2, p. 337.

1858. *Bagrus aorellus* Blyth, *Proc. As. Soc. Bengal,* p. 283.

1864. *Macrones lamarrii* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 79.

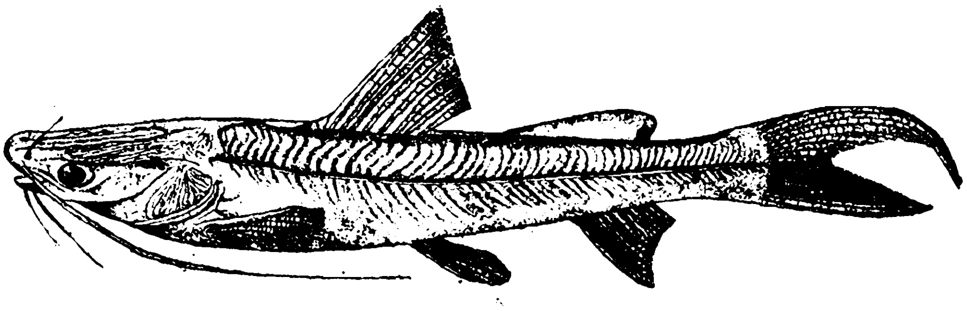
1877. *Macrones seenghala* Day, *Fish. India,* p. 444, pl. 99, fig. 1. (the Indus, Salt ranges of the Punjab Jumna and Ganges, as low as Delhi, also the Deccan, Kistan river).

1889. *Macrones seenghala* Day, *Fauna Brit. India, Fish.*, **1**, p. 150.

1942. *Mystus seenghala* Hora & Misra, *J. Bombay. nat. Hist. Soc.*, **43**, p. 222 (Poona).

1949. *Mystus seenghala* Hora, *J. zool. Soc. India*, **1**, p. 2 (the Rihand river).

1954. *Mystus* (*Osteobagrus*) *seenghala* Jayaram, *Rec. Indian Mus.*, **51**, p. 550.



TEXT-FIG. 16.—*Mystus* (*Aorichthys*) *seenghala* (Sykes) (After F. Day)

Vernacular names.—INDIA : *Air*, W. Bengal; *Ari*, or *Pogal*, Hindi; *Katurna*, *Singara*, *Seenghala*, M.P.; *Choot kah*, Poona; *Tengara*, Punjab; *Muti-jellah Deenghala*, *Shengal*, Telegu; Standardised name: *Singala*. BANGLADESH: *Air*. PAKISTAN: *Tengara*.

B. 12; D.1/7/0; P. 1/9; V 6; A. 11-12 (3/8-9); C. 19-21.

Body elongate, compressed. Head depressed, width 2·0—2·2 in its length, 4·5; depth 7·5—8·0 in total length (3·3 and 5·8—6·3 in standard length). Snout spatulate, 3·8 in head. Eyes 6·5—8·0 in head, 2·0—2·2 in snout, 1·5—2·0 in interorbital. Mouth terminal transverse, upper jaw the longer; gape 3·0 in head. Maxillary barbels reaching the last ray of the dorsal, outer mandibulars to the pectoral base, inner mandibulars 1/3 shorter, nasals to midorbit. Median longitudinal groove reaching the base of the occipital process; occipital process twice as long as broad at its base, reaching the interneural shield twice as long as broad, the latter reaching the basal bone of dorsal. Teeth villiform in band in jaw; vomerine teeth villiform, in crescentic continuous band. Rayed dorsal one-third to one-half higher than body with a weak spine, 1.3 in head, rugose externally, indistinctly serrated internally; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1.0-1·3 times rayed dorsal base extending opposite last anal ray; interdorsal 1·8 in adipose dorsal base. Pectorals low not reaching pelvics, 1·6 in head with a strong spine, 2·0 in head, roughened anteriorly serrated posteriorly. Pelvics not reaching anal, 2·1 in head; origin just behind or opposite the last dorsal ray nearer to anal origin than pectoral base. Anal 2·0 in head; origin 1·1 eye diameter behind adipose dorsal origin nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 4·5 in total length, upper lobe longer with 3 rays slightly produced; least height of caudal peduncle 1·8 in its length. Lateral line.

Skin smooth; upper surface of head granulated in ridges. Brownish above, silvery on sides and below; a round black spot less the ½ eye diameter at the posterior end of the base of adipose dorsal.

It attains 914 mm. in length; has been found in freshwater.

Distribution.—India : Punjab, Delhi, the Rihand, U.P., Bihar, M.P., Mota Mola river, Poona, Maharashtra and the Krishna, Andhra.

xviii. Subgenus **Mystus** Scopoli

No distinct separate interneural shield.

Key to species and subspecies of subgenus **Mystus**

1. Occipital process reaching basal bone of dorsal	3
2. Occipital process not reaching basal bone of dorsal	21
3. Median longitudinal groove on head reaching base of occipital process	5
4. Median longitudinal groove on head not reaching base of occipital process	13
5. Interdorsal space present	9
6. No interdorsal space	7
7. Pelvic origin half eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base; maxillary barbels extending to anal origin	*Mystus (M.) bleekeri*

8. Pelvic origin below last dorsal ray, equidistant between anal origin and pectoral base; maxillary barbels extending beyond caudal base	*Mystus (M.) cavasius*
9. Adipose dorsal base equal to rayed dorsal base ; interdorsal 1·2 in adipose dorsal base	*Mystus (M.) oculatus*
10. Adipose dorsal base 1·3—1·4 times rayed dorsal base ; interdorsal 2·4—3·0 in adipose dorsal base	11
11. Interdorsal 2·4 in adipose dorsal base ; anal papilla ; maxillary barbels reaching end of pelvics ; a single brown longitudinal band	*Mystus (M.) armatus*
12. Interdorsal 3·0 in adipose dorsal base ; no anal papilla ; maxillary barbels reaching end of anal ; 5 black longitudinal bands	*Mystus (M.) tengara*
13. Interdorsal space present	15
14. No interdorsal space	17
15. Adipose dorsal base extending 1·5 eye diameters behind last anal ray ; base 1·8 times rayed dorsal base ; maxillary barbels reaching posterior end of anal base	*Mystus (M.) montanus*
16. Adipose dorsal base extending opposite to last anal ray ; base equal to dorsal base ; maxillary barbels reaching pelvic base or anal origin	19
17. Adipose dorsal base extending half an eye diameter behind last anal ray ; maxillary barbels extending beyond anal origin	*Mystus (M.) pulcher pulcher*
18. Adipose dorsal base extending to opposite last anal ray ; maxillary barbels reaching end of pelvics	*Mystus (M.) pulcher horai*

19.	Maxillary barbel reaching pelvic base or anal origin; 5-7 narrow longitudinal bands; upper caudal lobe longer	*Mystus* (*M.*) *vittatus vittatus*
20.	Maxillary barbel reaching end of anal or middle of caudal peduncle; a single longitudinal band; caudal lobes subequal	*Mystus* (*M.*) *vittatus dibrugarensis*
21.	Median longitudinal groove on head reaching occipital process	23
22.	Median longitudinal grooves on head not reaching occipital process	29
23.	Rayed dorsal origin equidistant between snout end and caudal base ..	*Mystus* (*M.*) *peguensis*
24.	Rayed dorsal origin nearer to snout end than to caudal base	25
25.	Anal origin below middle of adipose dorsal base; inter-dorsal 2·0 in adipose dorsal base	*Mystus* (*M.*) *menoda*
26.	Anal origin opposite adipose dorsal origin; interdorsal equal to or 1·5 times adipose dorsal base	27
27.	Maxillary barbels reaching middle or end of pelvics; least height of caudal peduncle 1·4 in its length; 10 black round spots along lateral line; interdorsal 1·5 times adipose dorsal base	*Mystus* (*M.*) *punctatus*
28.	Maxillary barbel reaching caudal base; least height of caudal peduncle 2·0—2·3 in its length; no black round spots along lateral line; interdorsal 1·0 in adipose dorsal base	*Mystus* (*M.*) *microphthalmus*
29.	Interdorsal 2·0 times adipose dorsal base; maxillary barbels reaching end of pelvics or anal origin; occipital process half longer than wide at its base	*Mystus* (*M.*) *gulio*

30. Inter orsal equal to or 1 ·5 in adipose dorsal base; maxillary barbels reaching middle or end of pelvics; occipital process 2-3 times as long as broad . 31

31. Adipose dorsal base equal to interdorsal; maxillary barbels reaching middle of pelvics; occipital process thrice as long as broad *Mystus* (*M.*) *keletius*

32. Adipose dorsal 1 ·5 times interdorsal; maxillary barbels reaching end of pelvics ; occiptial process twice as long as broad . *Mystus* (*M.*) *malabaricus*

314. **Mystus (Mystus) armatus** (Day)

1865. *Hypselobagrus armatus* Day, *Proc. zool. Soc. Lond.*, p. 289 (type locality : Cochin, Malabar).

1877. *Macrones armatus* Day, *Fish. India*, p. 450, pl. 101, fig. 3 (Malabar, the Wynaad range of hills).

1889. *Macrones armatus* Day, *Fauna. Brit. India*, Fish., **1**, p. 161.

1931. *Macrones armatus* Hora, *Rec. Indian Mus.*, **33**, p. 1 (the Kyenchong river; Mergui Dt., L. Burma).

1954. *Mystus* (*Mystus*) *armatus* Jayaram, *Rec. Indian Mus.*, **51**, p. 539.

Vernacular names.—INDIA : *Cuaree, kaaree*, Malayalam; Standardised name : *Karee.*

B. 10; D. 1/7/0; P. 1/9; V. 6; A. 11 (3/8); C. 17.

Body elongate, compressed. Head compressed, width equals its height or its length minus snout 5 ·0—5 ·5; depth 5 ·2—5 ·5 in the total length (4 ·0 and 4 ·4 in standard length). Snout 3 ·1 in head. Eyes with free orbital margin, 4 ·0—5 ·0 in head, 1 ·2 in snout, 2 ·0 in interbital. Mouth terminal transverse, upper jaw longer. Maxillary barbels reaching end of pelvics, outer mandibulars ends of pectoral spine, inner mandibulars shorter, nasals to hind border of eye. Median longitudinal groove nearly reaching base of occipital process. Occipital process reaching basal bone of dorsal, 3 times as long as broad of its base. Teeth villiform in band in jaws. Vomerine patch crescentic, continuous. Rayed dorsal as high as body with a finely serrated or entire spine, 1 ·8 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base

1·4 times rayed dorsal base and 2·4 times interdorsal, extending opposite to last anal ray. Pectorals low, equal to head, with a strong spine as long as head minus snout with 10-14 internal denticulations. Pelvics 1·4 in head, not reaching anal; origin just behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·4 in head; origin below middle or adipose dorsal, nearer to pelvic origin than to caudal base. Anal papilla. Caudal forked, upper lobe longer, 1·1 times, head, 4·8—5·5 in total length; least height of caudal peduncle 1·2 in its length. Lateral line.

Skin smooth; upper surface of head and shoulder bone rugose. Laden or brown above, lighter below with or without a brown band on side, a dark spot at caudal base.

It attains 108 mm. in length; in fresh and brackish waters.

Distribution.—India : Cochin, the Wynaad range of hills, Kerala. Burma : Kyenchong river, L. Burma.

315. Mystus (Mystus) bleekeri (Day)

(Text-fig. 17)

1846. *Bagrus keletius* (*nec* Valenciennes) Bleeker, *Nat. Gen. Arch. Ned. Ind.*, 3(2), p. 135 (type locality : Bengal).

1864. *Macrones keletius* (*nec* Valenciennes) Günther, *Cat. Fish. Brit Mus.*, **5**, p. 84.

1877. *Macrones bleekeri* Day, *Fish. India*, p. 451, pl. 101, fig. 1 (type locality : Sind; Jumna; Upper waters of Ganges : Burma).

1889. *Macrones bleekeri* Day, *Fauna Brit. India*, Fish., **1**, p. 162.

1890. *Macrones bleekeri* Vinciguerra, *Ann. Mus. Stor. nat. Genova*, **9**, pt. 2, p. 219 (Mandalay).

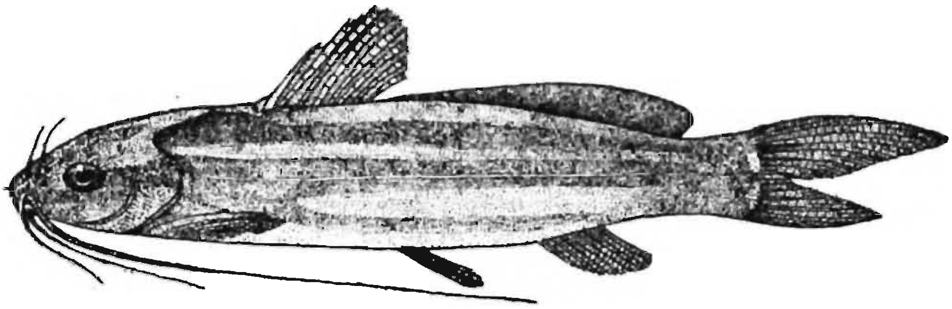
1910. *Macrones bleekeri* var. *burmanicus* Jenkins, *Rec. Indian Mus.*, **5**, p. 138 (Bhamo).

1921. *Macrones bleekeri* Hora, *Rec. Indian Mus.*, **22**, p. 168 (Manipur).

934. *Aoria bleekeri* Hora & Mukerji, *Rec. Indian Mus.*, **36**, p. 124, as *Macrones bleekeri* on p. 125 (Pegu, Yomas).

1935. *Mystus bleekeri* Hora & Mukerji, *Rec. India* (Melori, Tizu River; Naga Hills).

1954. *Mystus (Mystus) bleekeri* Jayaram, *Rec. Indian. Mus.*, **51**, p. 530.



TEXT-FIG. 17.—*Mystus* (*Mystus*) *bleekeri* (Day) (After F. Day)

Vernacular name.—INDIA : *Nga-chop*, Manipur.

B. 10; D. 1/7-8/0; D. 1/9-10; V 6; A. 9-10 (3/6-7); C. 17.

Body elongate, compressed. Head depressed, width equalling its length behind posterior nostrils and its height, 5·1—5·5; depth 6 in the total length (4·0 and 4·8 in standard length). Snout obtuse, 3·0 in head. Eyes with free orbital margins, 4·0—4·5 in head, 1·5—2·0 in snout, 1·5 in interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching anal fin, outer mandibulars to pectoral base, inner mandibulars shorter, nasals to hind border of eye. The median longitudinal groove shallow, reaching to the base of occipital process. Occipital process twice as long as broad at its base, reaching basal bone of dorsal. Teeth villiform in band in jaws; vomerine patch crescentic, continuous. Rayed dorsal nearly as high as body with a smooth or finely serrated spine, nearly 2·0 in head; origin much nearer to adipose dorsal origin than to snout end; adipose dorsal base 2·4 times rayed dorsal base, commencing just behind last dorsal ray and extending 2 eye diameters behind last anal ray. Pectorals low, 1·1 in head, with a strong spine equaling head minus snout, denticulated internally. Pelvics 1·5 in head, not reaching anal; origin about half an eye diameter behind last dorsal ray, nearer to pelvic origin than to caudal base. Caudal forked, 1·1 times head, 4·5—5·5 in total length; least height of caudal peduncle 1·9 in its length. Lateral line.

Skin smooth; nape, opercles, occipital and humeral processes rugose. Brownish grey above, lighter below, with 2 light longitudinal bands below lateral line, and fin often with dark band.

It attains 135 mm. in length; in freshwater.

Distribution.—India : the Yamuna, the upper waters of the Ganga, Bengal, Melori, Tizu river, Naga hills, Manipur; Pakistan : Sind. Bangladesh. Burma. Mandalay, Bhamo, Pegu Yomas.

316. Mystus (Mystus) cavasius (Hamilton)

(Text-fig. 18)

1822. *Pimelodus cavasius* Hamilton, *Fish. Ganges*, pp. 203, 379, pl. 11, fig. 67 (type locality : Gangetic provinces).

1841. *Pimeledus seengfee* Sykes, *Trans. zool. Soc· Lond.*, **2**, p. 374, pl. 66, fig. 2 (type locality : Belema macronema river at Pairgaow).

1865. *Hypselobagrus macronema* Bleeker, *Ned. Tijds. Dierk.*, **2**, p. 175 (type locality : Siam).

1877. *Macrones cavasius* Day, *Fish. India*, p. 447, pl. 100, fig. 1 (from Sind throughout India, Assam and Burma).

1889. *Macrones cavasius* Day, *Fauna Brit. India*, Fish., **1**, p. 155.

1890. *Macrones cavasius* Vinciguerra, *Ann. Mus. Stor. nat. Genova*, **9**, pt. 2, p. 218 (Rangoon, Mandalay, Bhamo).

1909. *Macrones cavasius* Jenkins, *Rec. Indian Mus.*, **3**, p. 287, (Barakur, Hazaribagh Dt., Bihar).

1910. *Macrones cavasius* Jenkins, *Rec. Indian Mus.*, **5**, pp. 137. 140 (Mandalay : Monghyr).

1911. *Macrones cavasius* Chaudhuri, *Rec. Indian Mus.*, **6**, p. 20 (Bhamo, Upper Burma).

1916. *Macrones cavasius* Chaudhuri, *Mem. Indian Mus.*, **5**, p. 434 (Barkul, Chilka lake, Orissa).

1916. *Macrones cavasius* Raj, *Rec. Indian Mus.*, **12**, p. 264 (Madras).

1929. *Aoria cavasius* Prashad & Mukerji, *Rec. India Mus.*, **31**, p. 179 (Myitkyina Dt.)

1935. *Mystus rhegma* Fowler, *Proc. Acad. nat. Sci. Philad.*, **87**, p. 102, fig. 27 (type locality : South Chiengamai, Chiengsen).

1936. *Mystus cavasius* Hora, *Rec. Indian Mus.*, **38**, p. 1 (Chitraldrug, Mysore).

1936. *Aoria cavasius* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 39 (Nerbudda & Mahanaddy rivers; Nagpur).

1938. *Mystus cavasius* Hora, *Rec. Indian Mus.*, **40**, p. 178 (Sakrigali Ghat, Santal Parganas, Nallamalai Hills).

1938. *Mystus cavasius* Misra, *Rec. Indian Mus.*, **40**, p. 256.

1938. *Mystus cavasius* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 23 (Deolali).

1940. *Mystus cavasius* Hora, *Rec. Indian Mus.*, **42**, pp. 366, 368, 370 (Mahanadi river, Raipur Dt., M.P.).

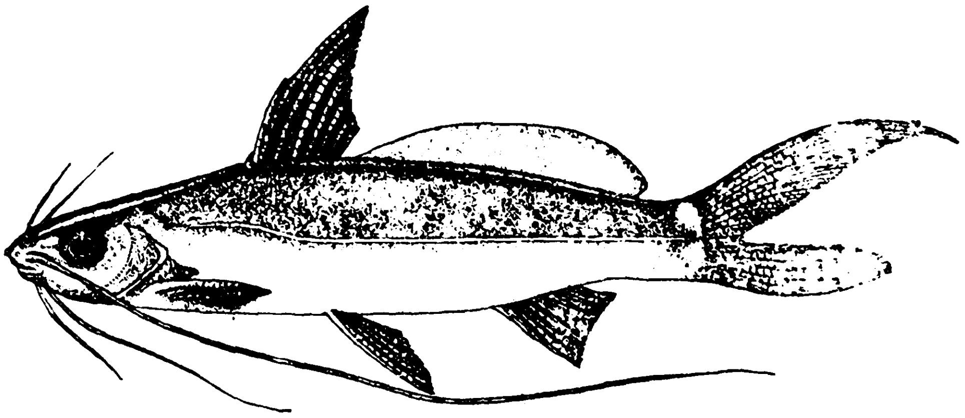
1941. *Mystus cavasius* Hora & Nair, *Rec. Indian Mus.*, **43**, p. 369 (Sandia on Nerbudda river, Hoshangabad Dt., M.P.).

1941. *Mystus cavasius* Hora & Law, *Rec. Indian Mus.*, **43**, pp. 238, 254 (Travancore).

1942. *Mystus cavasius* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **42**, p. 221 (Poona).

1949. *Mystus cavasius* Hora, *J. zool. Soc. India*, **1**, p. 2 (Rihand river, Mirzapur Dt., U.P.).

1954. *Mystus* (*Mystus*) *cavasius* Jayaram, *Rec. Indian Mus.*, **51**, p. 532.



TEXT-FIG. 18.—*Mystus* (*Mystus*) *cavasius* (Ham.) (After F. Day)

Vernacular names.—INDIA : *Kavasi tengara*, *Tengara*, Bengali; *Khirkirya*, Deolali : *Tenguah*, *Kala Tenguah*, *Singhara*, Hindi; *Kavasi*, *Shingti*, *Shingata*, M.P.; *Guntea*, Oriya; *Vella kelletee*, *Cutta*, Tamil; *Muti jella*, *Nahara jella*, Telegu. BANGLADESH : *Tengra*. BURMA : *Nga-zin-vaing*, *Ngazin-zine*, *Gawk Kyik*, *Nga-gin-gyaing*.

B. 6; D. 1/7/0; P. 1/8; V. 6; A. 11-13 (4/7-9); C. 16.

Body elongate, compressed. Head depressed, width equalling its length minus snout, 6·0—6·2; depth 5·5—6·0 in total length (4·3 and 4·3 standard length). Snout obtuse, 3·1 in head. Eyes with free orbital margins, 3·2—3·3 in head, 1·0—1·5 in anout, 1·2 in interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels extending beyond caudal base, outer mandibulars nearly to pelvic base, inner mandibulars and nasals to pectoral base. Median longitudinal groove wide, reaching to base of occipital process. Occipital process narrow, 3.4 times as long as broad at its base, reaching to the basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic, continuous band. Rayed dorsal higher than body, with a weak entire or finely serrated spine about the length of head minus snout; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 3 times rayed dorsal base, commencing close behind last dorsal ray and extending an eye diameter behind last anal ray. Pectorals low, 1 1 in head, with a strong spine as long as head minus anout, smooth externally, serrated internally. Pelvics 1 1 in head, not reaching anal; origin just below last dorsal ray, nearly midway between anal origin and pectoral base. Anal 1·4 in head; origin nearly below middle of adipose dorsal, nearer to pelvic origin than to caudal base. Caudal deeply forked, 1·7 times head, 3·6 in total length, upper lobe much longer; height of caudal peduncle 1·4 in its length. Lateral line.

Skin smooth; nape, slightly rough. Laden above, yellowish along abdomen and cheeks; maxillary barbels, dorsal and caudal dusky; pectorals, pelvics and anal dull white; rarely a bluish band along the lateral line.

It attains 460 mm. in length; in freshwater, tidal rivers and tidal lakes.

Distribution.—India : Punjab, Delhi, U.P., Bihar, W. Bengal, Assam, Orissa, Madras, M.P., Mysore, Andhra, Poona, Kerala. Pakistan. Bangladesh. Burma : Rangoon, Mandalay, Bhamo, Myitkyina Dt.—Thailand; in the latitudinal and longitudinal range of 8° 29′—31° 37′N., 74° 26′—97° 26′E. in the Indian region and 19° N., 99° E. in Thailand.

317. Mystus (Mystus) gulio (Hamilton)

(Text-fig. 19)

1822. *Pimelodus gulio* Hamilton, *Fish. Ganges*, pp. 201, 379, pl. 23, fig. 66 (type locality : higher parts of Gangetic estuaries).

1877. *Macrones gulio* Day, *Fish. India*, p. 445, pl. 99, fig. 2 (seas, estuaries and tidal waters from Sind, Bombay, through India and Burma to the Malay Archipelago).

1889. *Macrones gulio* Day, *Fauna Brit. India*, Fish., **1**, p. 151, fig. 64.

1890. *Macrones gulio* Vinciguerra, *Ann. Mus. Stor. nat. Genova*, **9**, pt. 2, p. 229 (Rangoon).

1913. *Macrones gulio* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 344 (Java, Madura, Sumatra, Borneo, Penang, Malacca).

1916. *Macrones gulio* Chaudhuri, *Mem. Indian Mus.*, **5**, p. 434 (Chilk lake).

1929. *Aoria gulio* Prashad & Mukerji, *Rec. Indian Mus.*, **31**, p. 179 (Indawgyi Lake).

1929. *Macrones gulio* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 358 (Trivandram).

1932. *Aoria gulio* Deraniyagala, *Spolia Zeylan.*, **16**, p. 285 (Ceylon).

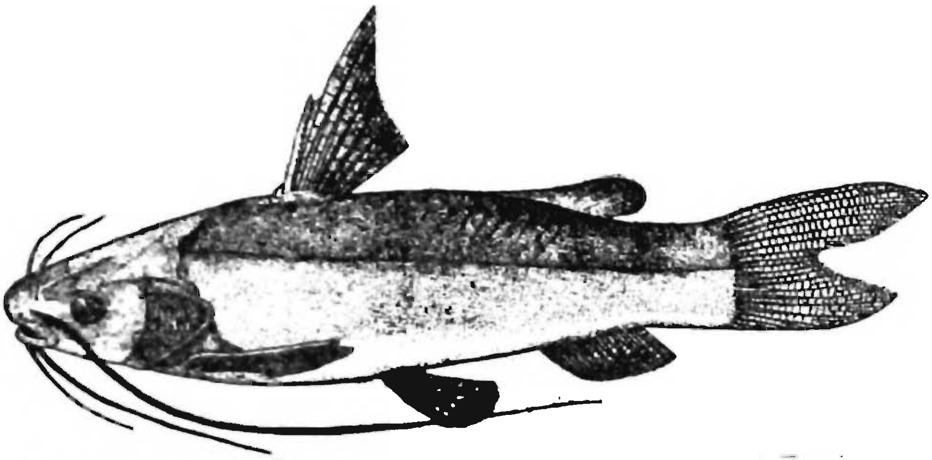
1939. *Mystus gulio* Hora, *Rec. Indian Mus.*, **41**, p. 111 (Maungmagan, Tavoy Dt., Lower Burma).

1941. *Mystus gulio* Hora & Law, *Rec. Indian Mus.*, **43**, p. 255 (Travancore).

1942. *Mystus gulio* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43**, p. 222 (Poona).

1954. *Mystus (Mystus) gulio* Jayaram, *Rec. Indian Mus.*, **51**, p. 543.

1955. *Macrones gulio* Munro, *Mar. Freshwater Fish. Ceylon*, p. 55 (estuaries moving into freshwater rivers).



TEXT-FIG. 19.—*Mystus* (*Mystus*) *gulio* (Ham.) (After F. Day)

Vernacular names.—INDIA : *Nuna tenggara*, *Nona tenra*. Bengal; *kala Tenguah*, Hindi; *Kadel-kelithi*, Malayalam; Standardised name : *Gale tengra*. BANGLADESH : *Nuna tenggara*. BURMA : *Nga_jerung*. SRI LANKA : *Mada anguluva*, *Manu ankutta*, *Vel anguluva*, Singhalese.

B. 9; D. 1/7/0; P. 1/8-9; V. 6; A. 12-15 (3-4/9-11); C. 17

Body elongate, compressed. Head depressed, width equalling its length minus snout, ¼ broad than height, 4·2—4·7; depth 5·0—5·7 in total length (3·7 and 3·8 in standard length). Snout broad 3·1 in head. Eyes with free orbital margins, 5·0—6·0 in head, 1·5 in snout, 2·0 in interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching to end of pelvics or anal origin, outer mandibulars longer than head, inner mandibulars shorter, nasals reaching beyond orbit. Median longitudinal groove, reaching to hind border of eye. Occipital process half longer than broad at its base, not reaching to the basal bone of dorsal. Teeth villiform in band in jaws; vomerine patch villiform, narrow, crescentic, continuous. Rayed dorsal higher than body with a strong spine, 2·0 in head, serrated internally, or 2 denticulations externally at its upper end; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·1 times the rayed dorsal base, 2·0 in interdorsal, extending opposite to last anal ray. Pectorals low, 1·2 in head, not reaching pelvics with a spine as long as head minus snout, serrated internally. Pelvics 1·5 in head, not reaching anal; origin just opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 3·0 in head; origin slightly behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 4·3—4·5 in total length, upper lobe the longer; the least height of caudal peduncle equalling its length. Lateral line.

Skin smooth; upper surface of head granulated. Bluish brown above, dull white below; maxillary barbels black.

It attains 460 mm. in length; in seas, estuaries, tidal rivers and lakes ascending freshwater.

Distribution.—India : Bombay, Poona, Kerala, Chilka lake; Gangetic estuaries. Pakistan. Bangladesh. Burma : Indawgyi Lake, Maungmagan, Tavoy Dt., Lower Burma. Sri Lanka.—Penang, Malacca, Indonesia; in the latitudinal and longitudinal range of 6°—25° 20′N., 67° 4′—96° 23′E. in the Indian region and 5° 25′N.—6° 12′ S. 100° 14′—113° 36′E. beyond Indian region.

318. **Mystus (Mystus) keletius** (Valenciennes)

1839. *Bagrus keletius* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 411 (type locality : Pondicherry).

1877. *Macrones keletius* Day, *Fish. India*, p. 449, pl. 98, fig. 5 (Madras to Pondicherry to Coimbatore, also Ceylon and Mysore).

1889. *Macrones keletius* Day, *Fauna Brit. India*, Fish., **1**, p. 160.

1916. *Macrones keletius* Raj, *Rec. Indian Mus.*, **12**, p, 265 (Madras).

1932. *Aoria keletius* Deraniyagala, *Spolia zelan.*, **16**, p. 284 (Ceylon).

1942. *Mystus keletius* Hora, *Rec. Indian Mus.*, **44**, p. 197.

1954. *Mystus* (*Mystus*) *keletius* Jayaram, *Rec. Indian Mus.*, **51**, p. 540,

1955. *Macrones keletius* Munro, *Mar. Freshwater Fish. Ceylon*, p. 55 (in freshwater rivers and streams).

Vernacular name.—SRI LANKA : *Pat ankutta*, Singhalese.

B. 10; D. 1/7/0; V. 6; A. 9-11 (2-3/7-8); C. 17.

Body elongate, compressed. Head depressed, width equalling its length minus snout, 4·7-5·0; depth 6·0-6·1 in the total length (3·8 and 4·5 in standard length). Snout 3·0 in head. Eyes 4·4-5·0 in head, 1·5 in snout, 2·0 in interorbital. Mouth terminal transverse, upper jaw longer. Maxillary barbels reaching the middle of pelvics, outer mandibulars to the end of pectoral spine, inner mandibulars shorter and nasals reaching opercle. Median longitudinal groove reaching opposite the hind border of preopercle. Occipital process narrow, 3 times as long as broad at its base, not reaching the basal bone of dorsal. Teeth villiform in band in jaws; vomerine patch, crescentic, continuous. Rayed dorsal equalling depth of body, with a spine 1·4 in head, serrated internally and 2 or 3 denticulations externally at its tip; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1 1 times rayed dorsal base and 1·3 times interdorsal, extending opposite to last anal ray. Pectorals low, not reaching pelvics, 1·3 in head, with a spine stronger than dorsal spine equalling head minus snout. Pelvics not reaching anal, 1·4 in head; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin about an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Preanal papilla. Caudal forked, 1·2 times head, 4·0 in total length; least height of caudal peduncle 1·8 in its length. Lateral line.

Skin smooth; upper surface of head, occipital process and opercle roughened. Silvery above, dull white below; a light band along lateral line, a silvery one above and another below it; a dark spot on shoulder.

It attains about 102 mm. in length; in freshwater, estuaries.

Distribution.—India : Pondicherry to Coimbatore, Madras. Sri Lanka.

319. Mystus (Mystus) malabaricus (Jerdon)

1849. *Bagrus malabaricus* Jerdon, *Madras J. Lit. Sci.* **15**, p 338 (type locality : Mountain streams in Malabar).

1877. *Macrones malabaricus* Day, *Fish. India*, p. 450, pl. 101, fig. 2 (Malabar coasts of India, Wynaad; specimen figured was from S. Canara).

1889. *Macrones malabaricus* Day, *Fauna Brit. India*, Fish., **1**, p. 160.

1929. *Macrones malabaricus* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 359 (Quilon).

1937. *Macrones malabaricus* Hora, *Rec. Indian Mus.*, **39**, p. 19 (Cauvery River, Coorg, Mysore).

1954. *Mystus (Mystus) malabaricus* Jayaram, *Rec. Indian Mus.*, **51** p. 544.

Vernacular name.—INDIA : *Kallen koori* Malayalam; Standardised name : *Valletta.*

B. 10; D. 1/7/0; P. 1/9; V. 6; A. 10-11 (2-3/8); C. 18.

Body elongate, compressed. Head depressed, width equalling its length behind angle of mouth, 5·0; depth 6·6 in total length (3·9 and 5·2 in standard length). Snout 3·0 in head. Eyes with free orbital margins, 3·5-4·5 in head, 1·2 in snout, 1·7 in interorbital Mouth terminal, transverse, upper jaw longer. Maxillary barbel, reaching middle or end of pelvics, outer mandibulars to the end of pectoral, inner mandibulars to base of pectoral, nasals to the hind border of eye. Median longitudinal groove reaching hind border of eye. Occipital process twice as long as broad, not reaching basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform in crescentic continuous band. Rayed dorsal slightly less than or equal to depth of body, with a weak spine, 2·0 in head, finely serrated or entire internally and with one denticulation externally; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·5 times interdorsal, 1·3 times rayed dorsal, extending opposite to last anal ray. Pectorals low, 1 1 in head not reaching anal, with a strong spine equalling head minus snout and with 8-10 internal denticulations, roughened externally. Pelvics 1·5 in head, not reaching anal; origin just behind last dorsal ray nearer to anal origin than to pectoral base. Anal 1·7 in head; origin about half an eye diameter before middle of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 times head, 4·7-6·0 in total length, upper lobe the longer; least height of caudal peduncle equalling its length. Lateral line.

Skin smooth; upper surface of head almost smooth. Deep laden above with a dark lighter white edged humeral spot; a dark band along lateral line terminating in a caudal blotch.

It attains 152 mm. in length; in freshwater, estuaries.

Distribution.—India : Ratnagiri Dt., Poona, Maharashtra, Cauvery river, Canara, Mysore, Wynaad, Malabar, Kerala.

320. Mystus (Mystus) menoda (Hamilton)

1822. *Pimelodus menoda* Hamilton, *Fish. Ganges*, pp. 203, 379, pl. 1, fig. 72 (erroneously given as *Mugil corsula* in the text; type locality : Kosi river; Mahananda).

1839. *Bagrus corsula* Valenciennes, *Hist. nat. Poiss*, **14**, p. 419 (type locality : Bengal).

1839. *Bagrus trachacanthus* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 419 (type locality : Bengal).

1877. *Macrones corsula* Day, *Fish India*, p. 446, pl. 100. fig. 5 (from Orissa through Bengal and Assam).

1889. *Macrones menoda* Day, *Fauna Brit. India*, Fish., **1**, p. 153.

1890. *Macrones menoda* Vinciguerra, *An. Mus. Store nat. Genova*, **9**, p. 223 (Mandalay, Bhamo).

1912. *Macrones menoda* var. *trachacanthus*, Chaudhuri, *Rec. Indian Mus.*, **7**, p. 210.

1938. *Mystus menoda* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, p. 92, fig. 91, p. 1, 2, fig. 2 (Siliguri Bazar).

1949. *Mystus menoda* Hora, *Rec. Indian Mus.*, **46**, p. 72 (Orissa, Bihar, Bengal, Assam).

1954. *Mystus* (*Mystus*) *menoda* Jayaram, *Rec. Indian Mus.*, **51**, p. 546.

1954. *Mystus* (*Mystus*) *menoda trachacanthus* Jayaram, *Rec. Indian Mus.*, **51**, p. 546.

Vernacular names.—INDIA : *Belawna*, Bihar; *Punjah-guggah*, Oriya.

B. 10; D. 1/7/0; P. 1/9; V. 6; A. 11-13 (3-5/8); C. 17.

Body elongate, compressed. Head depressed, width equalling its length minus snout, 4·0-4·6; depth 6·0-6·8 in total length (3·8 and 5·8 in standard length). Snout 3·5 in head. Eyes with free orbital margins, 5·2-7·0 in head, 1·5-2·0 in snout, 2·0-2·5 in flat interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching to pelvic ends, outer mandibulars to pectoral base, inner mandibulars to posterior extremity of preopercle and nasals to mid-orbit. Median longitudinal groove reaching occipital process in young and not so far in adult. Occipital process long, narrow, 5 times as long as broad at its base, not reaching basal bone of dorsal. Teeth villiform in band in jaws; vomerine patch crescentic, continuous. Rayed dorsal as high as body with a spine, 1-7 in head, serrated internally in its upper half; origin nearer to adipose dorsal base than to snout end; adipose dorsal base 1·3 times rayed dorsal base, twice interdorsal and extending opposite last anal ray. Pectorals low, not reaching pelvics, 1·4 in head, with a strong spine as long as head and with 20-23 serrations internally rugose externally. Pelvics 1 1 in head, not reaching anal; origin nearer to anal origin than to pectoral base and just behind last dorsal ray. Anal 2·2 in head; origin behind middle of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal forked, 1·3 in head, 5·0-6·0 in total length; upper lobe the longer often with prolongation; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth; upper surface of head, opercle, and humeral processes rugose with tubercular ridges. Greyish brown above, dull white below; several vertical black spots along anterior part of lateral line.

It attains at least 305 mm. in length; in freshwater.

Distribution.—India : Bombay, Maharashtra, Orissa, Bihar, W. Bengal, Assam, Bangladesh. Nepal : Kosi river. Burma : Mandalay, Bhamo.

321. **Mystus (Mystus) microphthalmus** (Day)

1877. *Macrones microphthalmus* Day, *Fish. India,* p. 446, pl. 100, fig. 4 (type locality : Irrawaddy, Burma).

1889. *Macrones microphthalmus* Day, *Fauna. Brit. India,* Fish., **1,** p. 154.

1889. *Macrones microphthalmus* Vinciguerra, *Ann. Mus. Stor. nat. Genova,* **9,** p. 225 (Mandalay, Bhamo).

1954.. *Mystus* (*Mystus*) *menoda microphthalmus* Jayaram, *Rec. Indian Mus.,* **51,** p. 547.

Vernacular name.—BURMA : *Nga-ike.*

B.10; D. 1/7/0; P. 1/9; V. 6; A. 12 (3/9); C. 17.

Body elongate, compressed. Head depressed, width equalling head minus snout, 4·0-4·4; depth 6·7-8·0 in total length (3·4 and 5·6-6·2 in standard length). Snout spatulate, 3·3 in head. Eyes with free orbital margins, 6·0-7·0 in head, 2·0 in snout, 2·5 in the flat interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching caudal base, outer mandibulars to first third of pectoral, inner shorter, nasals to hind third of eye. Median longitudinal groove almost reaching to the base of occipital process. Occipital process as long as wide at its base, not reaching basal bone of dorsal. Teeth villiform in band in jaws; vomerine band crescentic, continuous.

Rayed dorsal as high as body, with a slender entire spine, 2·0 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equalling dorsal base and interdorsal. Pectorals low, not reaching pelvics, 1·5 in head, with a spine 2·0 in head, having 9-10 internal denticulations. Pelvics not reaching anal, 1·7 in head; origin below opposite last dorsal ray, much nearer to anal origin than to pectoral base. Anal 2·0 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1 1 times head, 4·5-5·2 in total length, upper lobe the longer with the filamentous prolongation; least height of caudal peduncle 2·0-2·3 in its length. Lateral line.

Skin smooth; upper surface of head with smooth ridges. Light brown spot with purple above lighter below.

It attains 190 mm. in length; in freshwater, estuaries.

Distribution.—The Irrawaddy, Mandalay, Bhamo, Burma.

322. **Mystus (Mystus) montanus** (Jerdon)

1849. *Bagrus montanus* Jerdon, *Madras J. Lit. Sci.*, **15**, Pt. 2, p. 337 (type locality : Manantoddy, Wynaad).

1877. *Macrones montanus* Day, *Fish. India*, p. 449, pl. 101, fig. 4 (Wynaad Range of hills and Manantoddy).

1889. *Macrones montanus Day, Fauna Brit. India, Fish.*, **1**, p. 159.

1929. *Macrones montanus* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 358 (Trivandrum).

1937. *Mystus montanus* Hora, *Rec. Indian Mus.*, **39**, p. 10 (Coorg State).

1941. *Mystus montanus* Hora & Law, *Rec. Indian Mus.*, **43**, pp. 254, 255 (Travancore).

1954. *Mystus (Mystus) montanus* Jayaram, *Rec. Indian Mus.*, **51**, p. 542.

Vernacular name.—INDIA : *Vari kallen-coori*, Malayalam.

B. 10; D. 1/7/0; P. 1/6; V. 6; A. 12 (3/9); C. 19.

Body elongate, compressed. Head depressed, width equalling its length behind the angle of mouth, 5·0; depth 6·0 in total length (4·1 and 5·1 in standard length). Snout 2·8 in head. Eyes with free orbital margins, 3·5-4·0 in head, 1·0 in snout, 1·5 in interorbital. Mouth terminal, transverse, Upper jaw longer; width equalling 2/5 head.

Maxillary barbels reaching posterior end of anal base; outer mandibulars to pelvic base, inner to pectoral base, nasals to hind border of eye. Median longitudinal groove reaching midway between eye and occipital base. Occipital process narrow, 4 times as long as broad at its base, reaching to the basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform in crescentic continuous band. Rayed dorsal equal to depth of body with a weak spine 2·0 in head, denticulated internally; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·8 times rayed dorsal base, extending 1·5 eye diameters behind last anal ray; interdorsal equalling, rayed dorsal base. Pectorals low, not reaching pelvics 1·2 in head, with a strong spine 1·5 in head and with 16 denticulations of which 7 or 8, more pronounced in the terminal half. Pelvics not reaching anal, 1·6 in head; origin just behind last dorsal ray, equidistant between pectoral base and anal origin. Anal 2·0 in head; origin about an eye diameter behind adipose origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 5·0 in total length, upper lobe the longer; least height of caudal peduncle 2·1 in its length. Lateral line.

Skin smooth; upper surface of head, occipital process roughened with granulated lines and opercles with radiating lines, humeral with roughened lines. Silvery green above, becoming pale yellow below; a bluish spot on shoulder and a dark one at caudal base; a silvery band along the lateral line and one or 2 lateral bands above lateral line; fins greenish.

It attains 152 mm. in length; in freshwater, estuaries.

Distribution.—India : Wynaad, Kerala, the Cauvery river, Mysore, Hoshangabad Dt., M.P.

323. **Mystus (Mystus) oculatus** (Valenciennes)

1839. *Bagrus oculatus* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 424 (type locality : Malabar).

1849. *Bagrus oculatus* Jerdon, *Madras J. Lit. & Sci.*, **15**, pt. 2, p. 339 (Palghat).

1877. *Macrones oculatus* Day. *Fish. India*, p. 448, pl. 98, fig. 4 (Malabar coast & Coimbatore Dt., it attains 5 or 6 inches in length).

1889. *Macrones oculatus* Day, *Fauna Brit. India*, Fish., **1**, p. 156.

1929. *Macrones oculatus* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 358 (Alleppy, Travancore).

1941. *Macrones oculatus* Hora & Law, *Rec. Indian Mus.*, **43**, p. 238 (Travancore).

1954. *Mystus* (*Mystus*) *oculatus* Jayaram, *Rec. Indian Mus.*, **51**, p. 540.

Vernacular name.—INDIA : *Theydoo*, Malayalam.

B. 10; D. 1/7/0; P. 1/6; V. 6; A. 11-13 (3-4/8-9) C. 15.

Body elongate, compressed. Head depressed, width equalling its length minus snout, 5·1-5·5; depth 5·0-5·3 in the total length (4·0 and 4·1 in the standard length). Snout 4·0 in head. Eyes with free orbital margins, 3·0-3·5 in head, 1·0 in snout and interorbital. Mouth terminal and transverse, upper jaw longer. Maxillary barbels reaching middle of anal, outer mandibulars to end of pectoral, inner mandibulars reaching 1/4 of pectoral, nasals to postorbit. Median longitudinal groove reaching nearly to base of occipital process. Occipital process 3 times as long as broad, reaching basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform in crescentic continuous. Rayed dorsal fin equal to depth of body with a moderately strong spine, 1·4 in head, with 2 or 3 teeth externally and serrated internally; origin nearer to adipose dorsal than to snout end; adipose dorsal base equal to rayed dorsal base, extending to opposite 10th to 11th anal ray; interdorsal 1·2 in adipose dorsal base. Pectorals low, not reaching pelvics, equal to head with a strong spine, 1·3 in head with about 10 teeth internally. Pelvics not quite reaching anal, 1·4 in head; origin just behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin about half an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·3 times head and 4·3 in total length, upper lobe the longer; least height of caudal peduncle 1·4 in its length. Lateral line.

Skin smooth; upper surface of head rough. Silvery grey above lighter below with a dark spot at commencement of base of dorsal fin; dorsal fin tipped black, a dark band along its middle.

It attains 152 mm. in length; in freshwater, estuaries.

Distribution.—India : Malabar, Kerala, Coimbatore Dt., Madras.

324. Mystus (Mystus) peguensis (Boulenger)

1894. *Macrones peguensis* Boulenger, *Ann. Mag. nat. Hist.*, (6) 14, p. 196 (type locality : Sittang river, near Toungoo, Burma).

1954. *Mystus* (*Mystus*) *peguensis* Jayaram, *Rec. Indian Mus.*, **51**, p. 552.

B. 11; D. 1/7/0; P. 1/9; V 6; A. 12; C. 17.

Body elongate, compressed. Head depressed, as long as broad, 3·5; depth 5·5 in total length. Snout depressed. Eyes with free orbital margins, 8·0 in head, 3·0 in interorbital. Mouth terminal, transverse. Maxillary barbels reaching middle of pectoral, mandibulars 2/5 of head, nasals shorter. Median longitudinal groove almost reaching base of occipital process. Occipital process short, not reaching the basal bone of dorsal. Teeth villiform in band in jaws; vomerine band crescentic, continuous. Rayed dorsal with a strong, entire spine, equal to mandibular barbel; origin equidistant between snout end and caudal base; adipose dorsal base equal to rayed dorsal base and a little longer than anal base. Pectorals with a spine, 2·0 in head and serrated internally. Pelvics reaching anal. Caudal forked. Lateral line.

Skin smooth; upper surface of head granulate; Olive grey above, white beneath; a series of transverse blackish dotted lines on lateral line; dorsal and caudal fins dark, adipose dorsal blackish.

A specimen measuring 20 mm. in length was described by Boulenger; in freshwater.

Distribution.—Sittang river, Burma.

9. Mystus (Mystus) pulcher pulcher (Chaudhuri)

1911. *Macrones pulcher* Chaudhuri, *Rec. Indian Mus.*, **6**, p. 20, pl. 1, fig. 4 (type locality: Bhamo, Burma; type in the Zoological Survey of India, Calcutta).

1929. *Aoria pulcher* Prashad & Mukerji, *Rec. Indian Mus.*, **31**, p. 180 (Myitkyina Dt., Burma).

1954. *Mystus* (*Mystus*) *pulcher*, Jayaram, *Rec. Indian Mus.*, **51**, p. 332.

B. 6; D. 1/7/0; P. 1/9; V. 6; A. 12 (2/10); C. 17.

Body elongate, compressed. Head depressed, width 2·5 in head, 4·8; depth 5·2 in total length (3·7 and 4·1 in standard length). Snout 3·0 in head. Eyes with free orbital margins, 3·8-4·3 in head, 1·4 in snout, 1·2-1·8 in interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching beyond anal origin, outer mandibulars beyond middle pectoral spine, inner mandibulars to pectoral base, nasals 2·0 in head, reaching hind border of eye. Median longitudinal groove shallow, broad, not reaching to base of occipital process. Occipital process twice as long as broad, reaching basal bone of dorsal. Teeth villiform in band in jaws; vomerine patch crescentic, continuous. Rayed dorsal equalling depth of body, with a weak spine finely serrated on both edges, 1·7 in head; origin much nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·8 times rayed dorsal base, commencing close behind last dorsal ray, extending 1/2 eye diameter beyond last anal ray. Pectorals low, 1·2 in head, not reaching pelvics, with a strong spine, longer than dorsal spine, finely serrated externally and having 10-12 denticulations internally. Pelvics 1·5 in head, not reaching anal; origin opposite last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·4 in head; origin below middle of adipose dorsal, nearly equidistant between pelvic origin and caudal base. Caudal forked, equal to head, 4·8 in total length, lobes equal; least height of caudal peduncle 1·7 in its length. Lateral line.

Skin smooth; upper surface of head, occipital process and humerals granulated. Dark brown above becoming lighter below, with 2 pale whitish brown lateral stripes one above and the other below the lateral line; 2 large black spots larger than eye, one behind gill openings and the other on caudal base along the lateral line.

It attains 67 mm. in length; in freshwater.

Distribution.—Bhamo, Myitkyina Dt., Burma.

10. **Mystus (Mystus) vittatus horai** Jayaram

(Pl. II, figs. 1, 2)

1954. *Mystus* (*Mystus*) *vittatus horai* Jayaram, *Rec. Indian Mus.*, **51**, p. 536, text-fig. 4 (type locality: River Indus, Kalabagh).

B. 10; D. 1/7/0; P. 1/8; V. 6; A. 11 (3/8); C. 17.

Body elongate, compressed. Head depressed, width equalling its length behind angle of mouth, 3·5; depth 4·0 in standard length. Snout obtuse 3·4 in head. Eyes with free orbital margins, 5·0 in head, 1·5 in snout, 2·2 in interorbital. Mouth terminal, transverse, upper jaw slightly longer. Maxillary barbels reaching end of pelvics, outer mandibulars to 3/4 of pectoral, inner mandibulars to gill opening, nasals nearly 3/4 of head. Median longitudinal groove not reaching base of occipital process. Occipital process reaching the basal bone of dorsal fin. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic continuous or non-continuous band. Rayed dorsal $\frac{3}{4}$ depth of body, with a spine with 5-6 teeth on its upper half, 1·8 head; origin much nearer to adipose dorsal origin than to snout end; adipose dorsal base 1.8 times rayed dorsal base, commencing close behind last dorsal ray, extending opposite last dorsal ray. Pectorals low, not reaching pelvics, 1·4 in head, with a strong spine with 12 teeth internally, longer than dorsal spine. Pelvics not reaching anal 1·7 in head; origin opposite last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·5 in head; origin below middle of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal forked damaged; least height of caudal peduncle 1.8 in its length. Lateral line.

Skin smooth; upper surface of head rough. Bluisn yellow above, dull grey below; a faint humeral spot.

It attains 166 mm. in length; in freshwater.

Distribution.—The Indus at Kalabagh, Pakistan.

325. **Mystus (Mystus) punctatus** (Jerdon)

1849. *Bagrus punctatus* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 339. (type locality : Cauvery river, W. Ghats).

1877. *Macrones punctatus* Day, *Fish. India*, p. 445, pl. 100, fig. 3 (Bowany river at base of Neilgherry hills).

1889. *Macrones punctatus* Day, *Fauna Brit. India*, Fish., **1**, p. 153.

1937. *Mystus punctatus* Hora, *Rec. Indian Mus.*, **39**, p. 19 (Cauvery river, Coorg State).

1942. *Mystus punctatus* Hora, *Rec. Indian Mus.*, **44**, p. 197.

1954. *Mystus* (*Mystus*) *punctatus* Jayaram, *Rec. Indian Mus.*, **51**, p. 547.

Vernacular name.—INDIA : *Sholang kellete*, Tamil.

B. 11; D. 1/7/0; P. 1/7; V 6; A. 11-13 (3-4/8-9); C. 17.

Body elongate, compressed. Head depressed, width equalling its length behind nostrils, 4·5-5·0; depth 6·5-8·5 in total length (3·8-4·1 and 5·1-6·5 in the standard length). Snout 3·5 in head. Eyes with free orbital margins, 5·5-7·0 in head, 1·5-2·0 in snout, 2·5 in the convex interorbital. Mouth terminal, transverse, upper jaw longer. Maxillary barbels reaching middle or end of pelvics, outer mandibulars beyond pectoral base, inner ones shorter, not reaching pectoral base, nasals to posterior end of orbit. Median longitudinal groove nearly reaching the base on occipital process. Occipital process narrow, not reaching the basal bone of dorsal with an interspace twice its length. Teeth villiform in band in jaw; vomerine teeth villiform, if crescentic continuous band. Rayed dorsal higher than depth of body, with a moderately strong spine, 1·8 in head, serrated internally in its upper third; origin nearly midway between adipose dorsal origin and snout end; adipose dorsal base 1·2 in rayed dorsal base, extending opposite to 10th to 12th anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals low, not reaching pelvics, 1·2 in head, with a strong spine 1·4 in head, roughened externally, denticulated internally with 15-16 teeth. Pelvics not reaching anal, 1·6 in head; origin opposite to last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·7 in head; origin nearly opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·1 in head, 4·7-5·5 in total length; upper lobe slightly longer; least height of caudal peduncle 1·4 in its length. Lateral line.

Skin smooth; upper surface of head, humeral, furrowed. Greyish olive above becoming yellowish on sides and white beneath; 10 black round spots on lateral line; pelvics yellowish other fins dusky.

It attains 460 mm. in length; in freshwater.

Distribution.—India : Bombay, Maharashtra, Kerala, the Cauvery, the Bowany, Coorg, Nilgiris, Mysore.

326. Mystus (Mystus) tengara (Hamilton)

1822. *Pimelodus tengara* Hamilton, *Fish. Ganges*, pp. 183, 377, pl. 23, fig.60 (given erroneously as *P. batasio* in the legend : type locality : ponds of India).

1877. *Macrones tengara* Day, *Fish. India*, p. 447, pl. 101, fig. 5 (N. India, Punjab, Assam; the specimen figured from Assam).

1889. *Macrones tengara* Day, *Fauna Brit. India*, Fish., **1**, p. 156.

1913. *Macrones tengara* Chaudhuri, *Rec. Indian Mus.*, **8**, p. 255 (Kabo, Dibrugarh).

1940. *Mystus tengara* Hora, *Rec. Indian Mus.*, **42**, p. 367 (Mahanadi, Raipur, M.P.).

1954. *Mystus (Mystus) tengara* Jayaram, *Rec. Indian Mus.*, **51**, p. 538.

Vernacular names.—INDIA : *Tinggá-rah*, Assam; *Tengara*, Bengali; *Kuttahrah*, Hindi *Tinggarah*, *Karaal*, Punjab. PAKISTAN : *Tinggarah*, seagiades.

B. 10; D. 1/7/O; P. 1/8; V. 6; A. 11-13 (2-3/9-10); C. 19.

Body elongate, compressed. Head depressed, width equalling its length minus snout, 4·3; depth 5·3 in the total length (3·3 and 4·3 in standard length). Snout 4·0 in head. Eyes with free orbital margins, 3·5 in head, 0·7-1·0 in snout, 1·5 in interorbital. Mouth terminal, transverse, upper jaw the longer. Maxillary barbels reaching to the end of anal, outer mandibulars to the pelvic origin, inner ones to pectoral base, nasals 1·2 in head. Median longitudinal groove on head reaching the base of occipital process. Occipital process 3 times long as broad, reaching the basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic, continuous band. Rayed dorsal nearly equal to depth of body, with a spine 1·4 in head, serrated externally at its upper third and serrated internally; origin nearer to adipose origin than to snout end; adipose dorsal base 1·3 times the rayed dorsal base, entending opposite last anal ray; interdorsal 3·0 in adipose dorsal base. Pectorals low, not reaching pelvics; with a strong spine, 1·0-1·5 in head, entire externally and denticulated internally with 13 teeth. Pelvics not reaching anal, 1·4 in head; origin just behind the last dorsal ray, nearly equidistant between pectoral base and anal origin. Anal 2·0 in head; origin opposite to the middle adipose dorsal base, nearer to pelvic origin than to caudal base.

Caudal forked, 1 1 times head, 3·8-4·3 in total length, upper lobe the longer; least height of caudal peduncle 1·8 in its length. Lateral line.

Skin smooth; upper surface of head and occipital process rugose. Bright yellow with black shoulder spot; five black longitudinal bands; in some specimens mandibular barbels white with black streak.

It attains 100 mm. in length; in freshwater.

Distribution.—India : Punjab, U.P. Bihar, W. Bengal, Assam, the Mahanadi, Raipur M.P. Pakistan. Bangladesh.

11. **Mystus (Mystus) vittatus vittatus** (Bloch)

(Text-fig. 20)

1797. *Silurus vittatus* Bloch, *Ichth. Hist. nat.*, **11**, p. 40, pl. 371, fig. 2 (type locality : Tranquebar, S. India).

1822. *Pimelodus carcio* Hamilton, *Fish. Ganges*, pp. 181, 377; pl. 3, fig. 67 (erroneously given as *P. tengara* in the legend; type locality, in ponds in parts of Bengal).

1849. *Bagrus vittatus* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 338 (Madras),

1890. *Macrones vittatus* Vinciguerra, *Pesci di Birmania, Genova* p.93, (Mandalay, Tenasserim).

1909. *Macrones vittatus* Jenkins, *Rec. Indian Mus.*, **3**, p. 289 (Shasthancottah Lake, Kerala).

1910. *Macrones vittatus* Jenkins, *Rec. Indian Mus.*, **5**, p. 135 (Satpara).

1913. *Macrones mariannesis* Chaudhuri, *Rec. Indian Mus.*, **8**, p. 255 (Mariani, Assam).

1916. *Macrones vittatus* Raj, *Rec. Indian Mus.*, **12**, p. 250 (Madras).

1921. *Macrones vittatus* Hora, *Rec. Indian Mus.*, **22**, p. 173 (Manipur, Assam).

1929. *Macrones vittatus* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 358 (Sasthancotta, Travancore).

1932. *Aoria vittatus* Deraniyagala, *Spolia Zeylan.*, **16**, p. 283 (Ceylon).

1936. *Mystus aittatus* Suvatti, *Index Fish Siam*, p.75 (Chiengmai).

1937. *Mystus vittatus* Hora, *Rec. Indian Mus.*, **39**, p. 19 (the Cauvery in the Coorg State).

1938. *Mystus vittatus* Misra, *Rec. Indian Mus.*, **40**, p. 256 (Eastern Ghats).

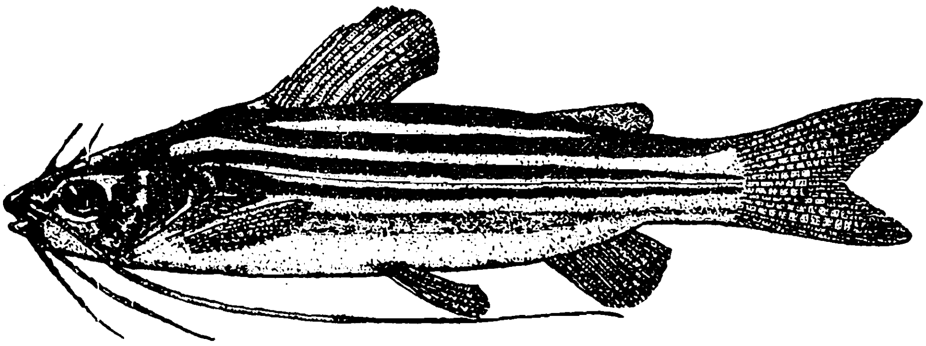
1940. *Mystus vittatus* Hora, *Rec. Indian Mus.*, **42**, pp. 366, 368 (Mahanadi River, Raipur Dt., M.P.).

1941. *Mystus vittatus* Hora & Nair, *Rec. Indian Mus.*, **43**, pp. 366, 367 (Hoshangabad Dt., M.P.).

1941. *Mystus vittatus* Hora & Law, *Rec. Indian Mus.*, **43**, p. 238 (Travancore).

1954. *Mystus* (*Mystus*) *vittatus* Jayaram, *Rec. Indian Mus.*, **51**, p. 534.

1955. *Macrones vittatus* Munro, *Mar. Freshwater Fish. Ceylon*, p. 55 (freshwater ponds and streams upto 3000 ft.).



TEXT-FIG. 20.—*Mystus* (*Mystus*) *vittatus vittatus* (Bloch)

Vernacular names.—INDIA : *Singorah*, Assam; *Tengra*, Bengali; *Kuggur*, Hindi; *Tengra*, M.P.; *Kallen-coori*, Malayalam; *Kuntiah*, *Kelletee* Tamil; *Sukujellah*, Telegu. BANGLADESH : *Tongra*. PAKISTAN: *Muller*, *Kuggur*. BURMA : *Nga-sa-ring*, *Nga-zin-yine*.

B. 10; D. 1/7/0; P. 1/9; V. 6; A. 9-12 (2-3/7-9); C. 17.

Body elongate, compressed. Head depressed, width equalling head minus snout, 4·5-5·0; depth 5·0-5·2 in the total length (3·5-4·0 and 4·2 in the standard length). Snout 4·0 in head. Eyes with free orbital margins, 4·0-6·0 in head, 1·0-2·0 in snout, 1·5-2·0 in interorbital. Mouth terminal, transverse, the upper jaw longer. Maxillary barbels reaching pelvic base or analrorigin, outer mandibulars to middle of pectoral, inner mandibulars to pectoral base or to gill opening, nasal to hind border of eye. Median longitudinal groove reaching to hind border of eye. Occipital process 3 times as long as broad at its base, reaching the basal bone of dorsal or with a short interspace. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic continuous band. Rayed dorsal equal to head in young or less than head in adult, with a spine nearly 2·0 in head, with 2-3 teeth externally and finely serrated internally; origin nearer to adipose dorsal origin than to snout end or midway between them; adipose dorsal base equal to rayed dorsal base and 1·3 in interdorsal, extending opposite to last anal ray. Pectorals not reaching pelvics, low, 1·2 in head, with a spine equal to head minus snout with 16 internal denticulations. Pelvics 1·4-1·6 in head, almost reaching or not reaching anal; origin below 3/4 of dorsal base or half an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base or nearly equidistant between them. Anal 1·6-2·0 in head; origin nearly opposite or slightly behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 4·5-5·1 in total length, upper lobe longer; least height of caudal peduncle 1·2 in its length. Lateral line.

Skin smooth; upper surface of head tuberculated, occipital process rugose. Silvery or gold; a light bluish band and a narrow one above and below it with humeral and caudal spots or with 5-7 narrow longitudinal black and white parallel stripes.

It attains 200 mm. in length; in freshwater.

Distribution.—Throughout India, Bangladesh, Pakistan, Burma and Sri Lanka.—Thailand; 6°-31°7′ N 62° 20′—99°3′ E. in the Indian region and 19° N., 99° E. in Thailand.

12. **Mystus (Mystus) vittatus dibrugarensis** (Chaudhuri)

1913. *Macrones montanus* var. *dibrugarensis* Chaudhuri, *Rec. Indian Mus.*, **8**, p. 254, pl. 9. figs. 2, 2a, 2b (type locality : Dibrugarh, Assam).

1954. *Mystus* (*Mystus*) *montanus* var. *dibrugarensis* Jayaram, *Rec. Indian Mus.*, **51**, p. 542.

B. 10; D. 1/7/0; P. 1/6; V. 6; A. 12 (3/9); C. 19.

Body elongate, compressed. Head depressed, 4·5, depth 5·2 in total length (3·4 and 4·0 in standard length). Snout 3·3 in head. Eyes with free orbital margins, 4·2 in head, 1·5 in snout, 1·7 in interorbital. Mouth terminal, transverse, upper jaw the longer. Maxillary barbels reaching end of anal fin or middle of caudal peduncle, outer mandibulars to end of pectoral, inner mandibulars 2/3 the length of outer mandibulars, nasals to postorbital margin. Median longitudinal groove not reaching the base of occipital process. Occipital process reaching the basal bone of dorsal. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic, continuous band. Rayed dorsal equal to head with an entire spine, 2·0 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to or slighter smaller than rayed dorsal base, interdorsal 1·4 times adipose dorsal base, extending opposite to last anal ray. Pectorals not reaching pelvics, with a spine 1·3 in head and 1·5 times the dorsal spine, denticulated internally, serrated externally. Pelvics not reaching anal, 1·5 in head; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 2·0 in head; origin slightly behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1 1 times head, 4·2 in total length, with equal lobes; least height of caudal peduncle 1·2 in its length. Lateral line.

Skin smooth; upper surface of head rugose. Dark brown above, lighter below; a dark line along the lateral line ending in black circular blotch at root of the caudal fin; all barbels black except the inner mandibulars, the fins being dull white.

It attains 68 mm. in length; in freshwater.

Distribution.—Dibrugarh, Assam, India.

135. Genus **Pseudobagrus** Bleeker

1860. *Pseudobagrus* Bleeker, *Act. Soc. Sci. Indo-Neerl.*, **8**, p. 60 (type, *Bagrus aurantiacus* T. & S.).

1865. *Pelteobagrus* Bleeker, *Ned. Tijd. Dierk.*, **2**, p. 9 (type, *Silurus calvarius* Basilewsky=*Pimelodus fulidraco* Rich., orthotypic).

1955. *Horabagrus* Jayaram, *Bull. nat. Inst. Sci. India*, No. **7**, p. 261 (type, *Pseudobagrus brachysoma* Gthr., orthotypic).

Body elongate, subterete. Head granulated, depressed. Snout bluntly pointed, depressed. Eyes lateral, with free circular lids, in the anterior half of head, moderate, small. Nostrils wide apart, posterior bearing the nasal barbels. 4 pairs of barbel, all shorter than head. Teeth villiform in band in jaw; palatine teeth villiform, in a narrow, transverse, semilunar band. Mouth terminal, transverse, jaws subequal. Gill opening wide; gill membranes overlapping each other over isthmus and free from isthmus. A shallow, median, longitudinal groove on head. Occipital process reaching or not reaching basal bone of dorsal. Cubito-humeral process short. Rayed dorsal with a strong, internally serrated spine. A short adipose dorsal far away from rayed dorsal. Pectorals with a strong spine serrated on both edges. Pelvics with 6 rays. Anal moderate, with 20-28 rays, much longer than dorsal. Caudal lunate. Lateral line. Air bladder. Branchiostegals 10.

Distribution.—India, Cochin-China, Korea, China, Japan.

327. **Pseudobagrus brachysoma** Günther

1864. *Pseudobagrus brachysoma* Günther, *Cat. Fish. Brit. Mus.* 5, p. 86 (type locality : Cochinchina as given by Günther; and "Cochin" as suggested by Trewavas after seeing the label of the type-specimen; *fide* K. C. Jayaram, *Ann Mag nat. Hist.*, (12) V, p. 981, November, 1952; but since Cochin china, China and Japan are the homelands of the genus *Pseudobagrus* Bl. the occurrence of *P. brachysoma* Gthr. in Cochinchina is not so doubtful as pointed out).

1865. *Pseudobagrus chryseus* Day, *Proc. zool. Soc. Lond.*, p. 290 (type locality : Malabar; type in the Zoological Survey of India, Calcutta).

1865. *Pseudobagrus chryseus* Day, *Fish. Malabar*, 2, p. 185, pl. 13, fig. 2 (Malabar).

1877. *Macrones chryseus* Day, *Fish. India*, p. 443, pl. 99, fig. 3.

1889. *Macrones chryseus* Day, *Fauna Brit. India*, Fish., 1, p. 148, fig. 63.

1909. *Macrones chryseus* Jenkins, *Rec. Indian Mus.*, 3, p. 289 (Sasthancottah lake, Travancore).

1929. *Macrones chryseus* Pillay, *J. Bombay nat. Hist. Soc.*, 33, p. 358 (Trivandrum).

1941. *Mustus chryseus* Hora & Law, *Rec. Indian Mus.*, 43, pp. 254, 255 (Travancore).

1952. *Pseudobagrus brachysoma* Jayaram, *Ann. Mag. nat. Hist.*, (12) 5, p. 982.

1955. *Horabagrus brachysoma* Jayaram, *Bull. nat. Inst. Sci. India*, No. 7, p. 261, fig. 1.

Vernacular names.—INDIA : *Neela katurnee,* Hindi; *Mungil yata, Moongil,* Malayalam.

B. 10; D. 1/7/0; P. 1/6; V. 6; A. 20—28; C. 17-19.

Body elongate, subterete. Head granulated, depressed, width equalling four-fifths of its length, 4·3-4·6; depth 5·0 in total length (3·5-3·8 and 4·2 in standard length). Snout pointed, 3·6 in head. Eyes with free orbital margins, in the anterior half of head, 4·7-5·0, 1·5 in snout, 2·0-2·5 in interorbital. Mouth, terminal, transverse, jaws subequal, cleft of mouth wide, not extending to the anterior margin of orbit; gape of mouth equalling half the length of head. Maxillary barbels reaching to pectoral base, outer mandibulars an eye diameter shorter than maxillaries, inner mandibulars 1/4 shorter than outer mandibulars, nasals nearly half as long as head. Teeth villiform in band in jaws; palatine teeth villiform, in a narrow, transverse, semilunar band. Median longitudinal groove on head shallow, reaching hind border of eye. Occipital process as long as wide at its base touching basal bone of dorsal. Cubito-humeral process short. Rayed dorsal equal to head with a strong spine 1·3 in head, with about 10 internal denticulatins and with 3 or 4 denticulations externally towards the tip, ending in a soft prolongation; origin nearer to snout end than to adipose dorsal origin; adipose dorsal base short, 3·0 in rayed dorsal base, above the last or fourth of anal; interdorsal half an eye diameter less than the distance between snout end and the rayed dorsal origin. Pectorals just reaching or not reaching pelvics, 1·3 in head, with a strong spine serrated externally and bearing 16-18 internal denticulations. Pelvics 2·1 in head, reaching anal; origin 1/4 eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal moderate, 2·3 in head; origin 2 eye diameters behind pelvic origin, nearer to pelvic origin than to caudal base; base equal to head, 2·3 times rayed dorsal base. Caudal lunate, 1·2 in head, 5·5-5·9 in total length; least height of caudal peduncle 1 1 in its length. Lateral line.

Skin smooth; upper surface of head, opercle and cubito-humeral processes with smooth ridges. Greenish yellow above, sides golden, with a large round black humeral spot ringed with light yellow; dorsal and anal yellowish orange, stained grey at their margins; caudal yellow with a black base and dark edges.

It attains 406 mm. in length; in freshwater, estuaries.

Distribution.—Malabar, Cochin, Kerala.— Cochin-china"; in the latitudinal and longitudinal range of 8° 29′-11° 20′ N., 76° 17′-76° 59′ in India and 14° N., 109° E. in Cochin-China.

136. Genus **Rama** Bleeker

1855. *Rama* Bleeker, *Ichth. Arch. Ind. Prodr.*, **1**, Siluri, p. 201 (type, *Pimelodus rama* Ham = *Rama buchanani* Blkr.).

Body elongate, subterete, posteriorly compressed. Head conical, depressed, covered with skin. Snout depressed, bluntly pointed. Eyes large, subcutaneous. Nostrils wide apart. 3 pairs of short barbel, a maxillary and 2 mandibular pairs, none more than eye diameter in length. Mouth, subterminal, upper jaw the longer, cleft of mouth not extending to orbit. Teeth villiform in band in jaws, in a continuous semilunar band on palate. A wide, median, longitudinal, groove on head. Occipital process connected to the basal bone of dorsal through a distinct oval interneural shield. Scapular and humero-cubital processes well developed. Gill openings wide; gill membrane free from isthmus. Rayed dorsal with a spine. An adipose dorsal. Pectoral with a spine. Pelvics with 6 rays. Anal with 16 rays. Caudal deeply forked. Lateal line. Skin smooth; upper surface, humero-cubital, scapular and occipital regions roughened. Air bladder not enclosed in bone. Branchiostegals 6.

Distribution.—India.

328. **Rama rama** (Hamilton)

1822. *Pimelodus rama* Hamilton, *Fish. Ganges*, pp. 176, 377, pl. 3, fig. 55 (type locality : the Brahmaputra).

1877. *Leiocassis rama* Day, *Fish. India*, p. 451, pl. 115, fig. 2.

1889. *Liocassis rama Day*, Fauna Brit. *India*, Fish., **1**, p. 163, fig. 65 (typographical error).

1938. *Leiocassis rama* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** (1937), pp. 7, 90 (Mahanadi river, near Siliguri).

1941. *Pimelodus rama* Hora & Law, *Rec. Indian Mus.*, **43**, pp. 31, 32.

B. 6; D. 1/7/0; P. 1/9; V. 6; A. 16 (3/13); C. 18.

Body elongate, subterete, compressed behind pelvics. Head conical, covered with skin, 4·-4·7; depth 4·5-5·2 in total length (3·1—3·8 and 3·5—4·2 in standard length).

Snout depressed, pointed, 4·0 in head. Eyes subcutaneous, large, 3·0—3·2 in head, 1·0 in snout, 1·0 in interorbital. Nostrils wide apart. Mouth subterminal, upper jaw the longer. Maxillary barbels small, equal to an eye diameter, the outer and inner mandibulars smaller than the maxillary barbels. Teeth villiform in band in jaws; in a continuous, semilunar band on palate. A wide, median, longitudinal groove on head extending to first third of occipital process. Occipital process thrice as long as wide at its base connected with the basal bone of dorsal by a distinct, oval, interneural shield. Scapular and humero-cubital well developed. Rayed dorsal with a spine, 1·2 in head; origin nearer to snout end than adipose dorsal; adipose dorsal origin 1/2 eye diameter behind anal origin, extending nearly opposite to last anal ray; adipose dorsal base 1·9 in interdorsal, equal to rayed dorsal base. Pectorals low, 1 1 in head, reaching pelvics, with a flattened spine, serrated internally. Pelvics 1·7 in head, not quite reaching anal; origin close behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 2·0 in head; origin 1/2 eye diameter before adipose dorsal origin, 2·0 eye diameters behind pelvic origin; anal base 1 1 times adipose and rayed dorsal bases. Caudal deeply forked, lobes subequal, 1 1 times head, 3·6—4·3 in total length; least height of caudal peduncle 2·0 in length. Lateral line.

Skin smooth; occipital, cubito-humeral and scapular regions roughened. Air bladder not enclosed in bone. Dull yellow with short vertical brown marks and a black humeral spot.

It attains 76 mm. in length; in freshwater.

Distribution.—The Brahmaputra, Assam.

137. Genus **Rita** Bleeker

1858. *Rita* Bleeker, *Ich. Arch. Ind. Prodr.*, **1**, Siluri, p. 60 (type, *Pimelodus rita* Ham., orthotypic).

1867. *Gogrius* Day, *Proc. zool. Soc. Lond.*, p. 553 (type, *G. sykesii* Day, orthotypic).

Body elongate, subterete. Head depressed, covered with skin, occipital region osseous. Snout depressed broadly. eyes subcutaneous, lateral. Nostrils on either side, subcontiguous, but the pair of one side widely separated from the pair of other side; a minute nasal barbel before the posterior nostril. 3 pairs of barbels. Mouth transverse, the upper jaw longer. Teeth villiform in both jaws or mixed with molariform in the lower jaw; palatine teeth molariform, in two patches. Occipital process reaching basal bone of dorsal. Humero-cubital process much elongated. Gill openings wide; gill membrane free from isthmus. Rayed dorsal with a very strong spine, serrated on both edges or smooth externally. An adipose dorsal. Pectorals low, horizontal, with a strong spine serrated on both edges. Pelvics low, horizontal, with 7—8 rays. Anal moderate. Caudal forked. Lateral line. Skin smooth; upper surface of head, humero-cubital scapular and occipital regions roughened. Air bladder with or without posterior prolongation, not enclosed in bone. Branchiostegals 8.

Distribution.—India, Pakistan, Bangladesh, Burma.

The genus **Rita** is represented by four species in the Indian region.

Key to species of genus **Rita** Bleeker

1. Mandibular teeth villiform or cardiform	*R. kuturnee*
2. Mandibular teeth posteriorly molariform ..	3
3. Palatine teeth in 2 widely separate patches	*R. rita*
4. Palatine teeth in 2 closely set patches	5
5. Palatine patches converging anteriorly ; dorsal spine longer than head, serrated anteriorly . ..	*R. chrysea*
6. Palatine patches not converging anteriorly ; dorsal spine shorter than head, entire anteriorly .	*R. pavimentatus*

329. **Rita chrysea** Day

1877. *Rita chrysea* Day, *Fish. India*, p. 455, pl. 104, fig. 1 (type locality : Orissa).

1889. *Rita chrysea* Day, *Fauna Brit. India*, Fish, **1**. p. 167.

1936. *Rita chrysea* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 41 (Mahanaddy river).

B.8; D. 2/6/0; P. 1/9; V. 8; A. 12(2/10); C. 18.

Body elongate, subterete. Head depressed, covered with skin, width equalling its length minus snout, 4·2-4·9; depth 5·9—6·0 in total length (3·2—3·9 and 4·5—4·6 in standard length). Snout depressed, broadly rounded, 3·5 in head. Eyes subcutaneous, lateral, in the anterior half of head, 3·5—4·0 in in head, 1·0 in snout, 1·0 in interorbital. Mouth transverse, upper jaw longer; width equalling 4/13 of the length of head. Maxillary barbels reaching pectoral base, mandibular barbels slightly shorter, nasal barbels $\frac{1}{2}$ eye diameter. Teeth villiform in upper jaw and in the anterior part of the lower jaw, globular in the posterior part of lower jaw; palatine teeth molariform in 2 patches, converging anteriorly almost touching each other in front half, diverging posteriorly. Occipital process as wide at its base as long, notched anteriorly, touching the V-shaped basal bone of dorsal. Cubito-humeral process as long as head minus snout. Rayed dorsal 1·4 times head, reaching middle of adipose dorsal, with a moderately strong spine 1·3 times head, fully serrated internally coursely serrated externally; adipose dorsal base 1·5 in rayed dorsal base, extending opposite to last anal ray; interdorsal 2·0 in adipose dorsal base. Pectorals low, horizontal, 1·2 times head, reaching pelvics with a moderately strong spine 1·2 times head, serrated on both edges. Pelvics not reaching anal, 1·8 in head; origin slightly behind last dorsal ray, nearer to anal origin than to pectoral base. Anal short, 1·3 in head; origin slightly before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, upper lobe slightly large, equal to head, 4·2—4·9 in its length. Lateral line.

Skin smooth; upper surface of head occipital, cubito-humeral and scapular processes rugose. Yellowish with fins stained gray.

It attains 127 mm. in length; in freshwater.

Distribution.—the Mahanaddy, Orissa.

330. **Rita kuturnee** (Sykes)

(Text-fig. 21)

1838. *Phractocephalus kuturnee* Sykes, *Proc. zool. Soc. Lond.* Part **6**, p. 164.

1840. *Arius pumilus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 97, fig. 1 (young specimen, so priority not given).

1841. *Phractocephalus kuturnee* Sykes, *Trans. zool. Soc. Lond.*, **2**, p. 372, pl. 65, fig. 3 (type locality : Beema river at Pairgaon).

1864. *Rita hastata* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 93.

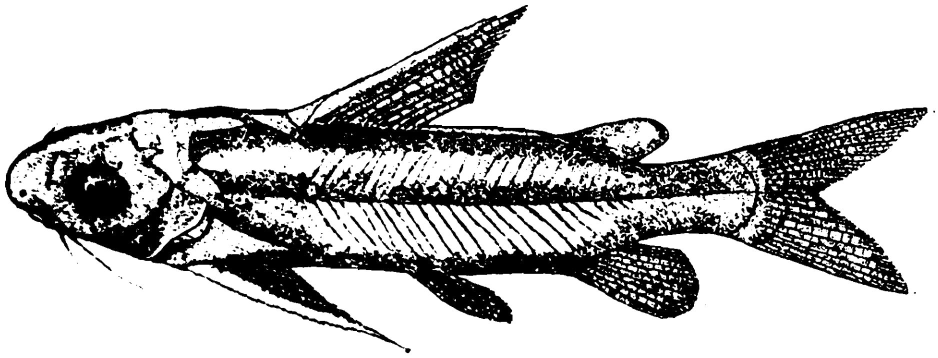
1864. *Rita kuturnee* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 93.

1877. *Rita hastata* Day, *Fish. India*, p. 456, pl. 103, fig. 4. (Deccan, Poona, Tungabhadra and Kistna rivers).

1889. *Rita hastata* Day, *Fauna Brit. India*, Fish., **1**, p. 168.

1936. *Rita hastata* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 42 (Nagpur market).

1942. *Rita hastata* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43**, p. 222 (Poona).



TEXT-FIG. 21.—*Rita kuturnee* (Sykes)

B. 8; D. 2/6/0; P.1/10; V. 7-8; A. 13-14 (5/8-9); C. 18.

Body elongate, subterete. Head depressed, covered by skin, width equalling the length of head behind the angle of mouth, 4·2—4·7; depth 5·6—6·0 in total length (3·2—3·8 and 4·6—5·0 in standard length). Snout broadly rounded, 3·3 in head. Eyes subcutaneous, lateral, 3·3 in head, 1·0 in snout, 1·0 in interorbital. Mouth transverse, upper jaw longer; width 5/8 of the length of head, cleft of mouth not reaching anterior margin of orbit. Maxillary barbels reaching pectoral base, mandibular barbels to hind border eye, nasal barbels to first third of eye. Teeth villiform or cardiform in both jaws; palatine teeth granular posteriorly and pointed anteriorly, in 2 elliptical patches converging anteriorly, wide apart posteriorly. Occipital process half longer than wide at its base, emarginate anteriorly meeting V-shaped basal bone of dorsal. Cubito-humeral process as long as head minus snout. Rayed dorsal 1 ·0—1 ·2 times head, with a moderately strong spine, finely serrated internally and serrated externally in its lower third; adipose dorsal base 1 ·4 in rayed dorsal, extending opposite last anal ray; inter-dorsal 1 ·4 times adipose dorsal base. Pectorals low, horizontal, 1 ·2 times head, reaching pelvics, with a moderately strong spine, 1 ·0 in head, serrated on both edges. Pelvics not reaching anal, 1 ·5 in head; origin below last dorsal ray, nearer to anal origin than to pectoral base. Anal short, 1 ·3 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, lobes sub-equal, pointed, equal to head, 4 ·2—4 ·7 in total length; least height of caudal peduncle 1 ·6 in its length. Lateral line.

Skin smooth, upper surface of head, occipital cubito-humeral scapular processes roughened. Brownish above, silvery on sides.

It attains 153 mm. in length; in freshwater.

Distribution.—India : the Beema, Nagpur, M.P., Poona, Maharashtra, the Tungabhadra and Kistna rivers,

331. **Rita pavimentatus** (Valenciennes)

1832. *Arius pavimentata* Valenciennes, in Jacquemont *Voy. Ind. Orient. Atlas*, 2, Poiss., pl. 17, fig. 2.

1838. *Phractocephalus gogra* Sykes, *Proc. zool. Soc. Lond.*, Part 6, p. 164.

1841. *Phractocephalus gogra* Sykes, *Trans. zool. Soc. Lond.*, 2, p. 374. pl. 66, fig. 1 (type locality : Beema river and Mota Mola river at Poona).

1867. *Gogrius sykes* Day, *Proc. zool. Soc. Lond.*, p. 563 (type locality: Kurnool)

1877. *Rita pavimentata* Day, *Fish. India*, p. 455, pl. 103, fig. 3 (from Poona and the rivers in the Deccan and affluents of the Kistna : the specimen figured, life-size, was from Kurnool).

1889. *Rita pavimentata* Day, *Fauna Brit. India*, Fish., **1**, p. 167.

1936. *Rita pavimentata* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 41 (the Nerbudda and Godavary rivers).

1942. *Rita pavimentata* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43**, p. 222 (Poona).

Vernacular name.—INDIA : *Pilah-gokundu*, Hindi; *Ghagra*, M.P., *Banki yeddu*, Telegu.

B.8; D.2/6/0, P.1/10; V.8; A.12-13(4/8-9); C.17.

Body elongate, subterete. Head depressed, covered by skin, width equalling its length behind the angle of mouth, 3·7—4·0; depth 6·0 in total length (3·2—3·4 and 4·9 in standard length). Snout broadly rounded, 3·0 in head. Eyes subcutaneous, lateral, in the anterior half of head, 5·0—6·0 in head, 2·0—2·2 in snout, 2·5 in interorbital. Mouth transverse, upper jaw longer; width 3/10 of the length of head, cleft of mouth not extending to the anterior margin of orbit. Maxillary barbels reaching the pectoral base, the mandibular barbels a little longer than maxillaries, reaching beyond pectoral base, nasal barbels to anterior margin of eye. Teeth villiform in upper jaw and in the anterior part of lower jaw, molariform in the posterior part of lower jaw; palatine teeth molariform, in 2 semi-elliptical patches, close together along median line. Occipital process more than twice as long as broad at its base, notched anteriorly, reaching the V-shaped basal bone of dorsal. Cubito-humeral process as long as head behind mid-orbit or a little longer. Rayed dorsal 1·1 in head, with a moderately strong spine, 1·3 in head, finely serrated internally, smooth externally; adipose dorsal base 1·1 in rayed dorsal base, extending opposite last anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals low, horizontal, not reaching pelvics, 1·1 in head, with a moderately strong spine 1·3 in head, serrated on both edges. Pelvics 2·0 in head, not reaching anal; origin below 5th branched dorsal ray, nearer to anal origin than to pectoral base. Anal short, 1·2 in head; origin half an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, lobes subequal pointed, 1·2 in head, 4·7 in total length; least height of caudal peduncle 1·2 in its length. Lateral line.

Skin smooth, upper surface of head, occipital process, smooth; humero-cubital processes, scapular processes roughened with lines. Dull yellowish with darker fins.

It attains 157 mm. in length; in freshwater.

Distribution.—India : Poona, Kurnool, the affluents of Kistna, the Narbada.

332. **Rita rita** (Hamilton)

(Text-fig. 22)

1822. *Pimelodus rita* Hamilton, *Fish. Ganges*, pp. 165, 376, pl. 104, fig. 3 (type locality : estuaries of Bengal).

1840. *Arius ritoides* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 92.

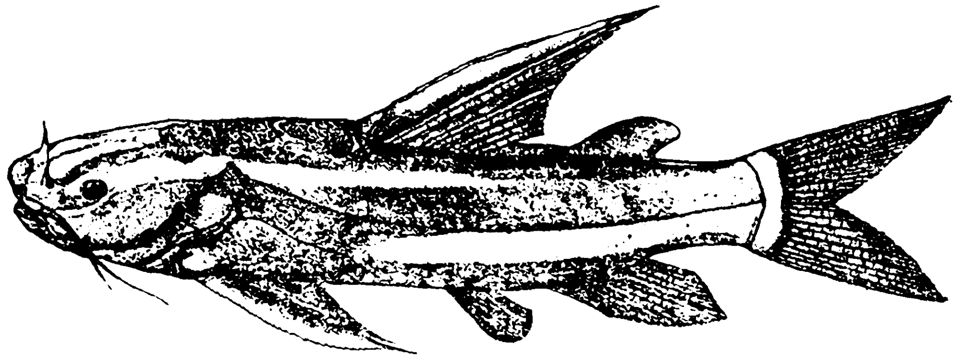
1854. *Rita crucigera* (Owen) Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 92 (type locality : Bengal).

1877. *Rita buchanani* Day, *Fish. India*, p. 454, pl. 103, fig. 1 [(semi adult), fig. 2 (immature), pl. 104, fig. 2 (young); Indus and affluent rivers, Jumna and Ganges also the Irrawaddi; the specimen figured (fig. 1) was from Calcutta, the second (life size) was from Lahore].

1889. *Rita buchanani* Day, *Fauna Brit. India*, Fish., **1**, p. 165.

1890. *Rita ritoides* Vinciguerra, *Pescid Birmania*, p. 107 (Rangoon).

1921. *Rita rita* Hora, *Rec. Indian Mus.*, **22**, p. 29 (Ravi river near Lahore).



TEXT-FIG. 22.—*Rita rita* (Hamilton)

Vernacular names.—INDIA : *Rita*, Bengali; *Choua*, Bihar. BANGLADESH : *Rita*. BURMA : *Nga-htway*.

B.8; D.2/6/0; P.1/10; V.8; A.12-13(4-5/8); C.17.

Body elongate, subterete. Head depressed, covered by skin, width equalling its length behind nostril, 3·8—4·2; depth 5·2—6·2 in total length (3·2—3·4 and 4·5—5·0 in standard length). Snout depressed, broadly rounded, 3·2—3·6 in head. Eyes lateral, in the anterior half of head, subcutaneous, above angle of mouth, 8·0—10·0 in head, *2·5—3·0 in snout, 2·5—3·0 in interorbital.* Mouth transverse, upper jaw longer, width equalling half length of head, cleft of mouth not extending below to anterior margin of eye. Maxillary barbels extending to base of pectoral spine, the mandibulars an eye diameter shorter than maxillaries, nasal barbels equal to eye, not reaching anterior margin of eye. Teeth villiform in upper jaw and in the anterior part of lower jaw, molariform in the posterior part of lower jaw; palatine teeth molariform, in two elliptical patches, widely separated posteriorly, converging anteriorly. Occipital process as long as wide at its base, notched anteriorly touching basal bone of dorsal; basal bone of dorsal as long as occipital process. Cubito-humeral process ¾ the length of head extending opposite to dorsal origin. Rayed dorsal 1·0—1·3 times head, with a strong spine, serrated internally at the distal part and entire externally, reaching end of adipose dorsal; origin nearer to snout end than to caudal base; adipose dorsal base 1·2 in rayed dorsal base, extending nearly opposite to last anal ray; interdorsal 1·0 time (in adult), 1·2—1·5 times (in juvenile) adipose dorsal base. Pectorals low, horizontal, reaching or *not reaching pelvics, equal to head,* with a strong spine serrated on both edges. Pelvics just reaching or not reaching anal, 1·8—2·3 in head; origin opposite last dorsal ray (in juvenile) or below middle of rayed dorsal (in adult), nearer to anal origin than to pectoral base. Anal short, 1·3 in head; origin opposite to adipose origin (in adult) or slightly before adipose origin (in young), nearer to pelvic origin than to caudal base. Caudal forked, lobes subequal, pointed, 1·2 in nead, 4·5—5·0 in total length; least height of caudal peduncle 1·4—1·8 in its length. Lateral line.

Skin smooth; upper surface of head, occipital, scapular and humero-cubital processes granulated. Lurid green above lighter below; hind edge of dorsal blackish.

It attains 1220 mm. in length; in fresh and tidal waters.

Distribution.—India : Punjab, Yamuna, Ganga, estuaries of W. Bengal, the Hooghly at Calcutta. Pakistan: the Indus. Bangladesh. Burma : Rangoon.

LI. Family CHACIDAE

Body flat, stumpy, vertically compressed to pelvics and tapering behind. Head large, broad depressed. Eyes rudimentary, superior, subcutaneous. Nostrils remote from each other, anterior tubular, the posterior with a tentacle. 3 pairs of short barbels. Mouth very wide, lower jaw prominent. Teeth villiform in band in jaws, none on palate. A deep median longitudinal groove on head; occipital process reaching the basal bone of dorsal. Gill openings restricted to upper side of head; gill membranes confluent with isthsmus. First dorsal short with a strong spine, second dorsal spineless united with caudal. Pectorals horizontal, with a strong spine serrated on both edges. Pelvics horizontal, with 6 rays. Two spineless rayed anals, the first with 7—10 rays, the second longer, united with caudal. Caudal rounded, united with second dorsal and second anal. Lateral line. Air bladder large, not encased in bony capsule. Head, body and lateral line with a few series of cutaneous tentacles. Branchiostegals 6.

The family CHACIDAE is represented by a single genus in the Indian region.

138. Genus **Chaca** Gray

1831. *Chaca* Gray, *Zool. Misc.*, p. 8 (type, *Platystacus chaca* Ham.)

1834. *Chaca* Valenciennes in *Belanger*, *Voy. Ind. Orient*, *Zool. Poiss.*, p. 385 (type, *Chaca lophioides* V.).

Body flat, stumpy, vertically compressed to pelvics and laterally compressed and tapering posteriorly. Head large, broad, depressed. Eyes minute, superior, subcutaeous, wide apart. Nostrils wide apart, anterior tubular, posterior with a short tentacle. 3 pairs of barbels. Mouth very wide, lower jaw prominent. Teeth villiform in band in jaws; palate edentulous. A deep median longitudinal groove on head; occipital process reaching basal bone of dorsal. Gill openings narrow not extending to lower side of head; gill membanes confluent, with broad isthmus. 2 rayed dorsals; no adipose dorsal. First rayed dorsal short, with strong spine, the second dorsal spineless confluent with caudal. Pectorals horizontal, with a strong spine serrated on both edges. Pelvics horizontal, with 6 rays. Two rayed spineless anals; first anal with 7—10 rays; the second, longer confluent with caudal. Caudal rounded, confluent with second dorsal and second anal. Lateral line. Head, body and lateral line with a few series of short fleshy tentacles. Branchiostegals 6. Air bladder large, cordiform not enclosed in bone. No axillary pore.

Distribution.—India, Bangladesh, Nepal, Burma, Malaya, Sumatra, Borneo, Banka.

333. **Chaca chaca** (Hamilton)

1822. *Platystacus chaca* Hamilton, *Fish. Ganges*, pp. 140, 374, pl. 28 fig. 43 (type locality : the rivers and ponds of the north eastern parts of Bengal).

1834. *Chaca lophioides* Valenciennes in Belanger, *Voy. Ind. Orient. Zool. Poiss.*, pl. 4, fig. 2. p. 386, (type locality : Bengal).

1852. *Chaca bankanensis* Bleeker, *Nat. Tijds. Ned. Ind.*, 3, p. 455 (type locality Banka).

1862. *Chaca bankanensis* Bleeker, *Atl. Ichth.*, 2, p. 96, tab. 95, fig. 1.

1864. *Chaca lophioides* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 29 (Nepal; Bengal).

1864. *Chaca bankanensis* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 29 (Sumatra, Borneo, Banka).

1864. *Chaca buchanani* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 29 (Ganges, Mc Clelland's collection).

1877. *Chaca lophioides* Day, *Fish. India*, p. 481, pl. 112, fig. 2 (figured life-size was from Debrooghar in Assam).

1889. *Chaca lophioides* Day, *Fauna Brit. India*, Fish., 1, p. 111, fig. 46.

1890. *Chaca lophioides* Vinciguerra, *Pisci de Birmania*, p. 47 (Mandalay).

1913. *Chaca chaca* Weber & de Beufort, *Fish. Indo-Austral. Archipel.*, 2, p. 246 (Sumatra; Borneo; Banka).

1936. *Chaca chaca* Tweedie, *Bull. Raffles Mus.*, No. 12, p. 18.

1937. *Chaca chaca* Herre & Myers, *Bull. Raffles Mus.*, No. 13, p. 67.

1938. *Chaca chaca* Fowler, *Fish. Bull.*, Singapore, No. 1, p. 247.

938. *Chaca chaca* Shaw & Shebbeare, *J. roy. As. Soc. Bengal. Sci.* 3, p. 85 (rivers of the Duars and Terai).

1941. *Chaca chaca* Hora & Gupta, *Bull. Raffles Mus.*, No. **17**, p. 36 (Mawai Dt., Johore).

Vernacular names.—INDIA : *Chega*, Bengali; *Pema*. Bhagalpur; *Gageb*, Mechi; *Coor-cur-riah*, Oriya : *Chega bokau*, Rabha.

B.6; D.1/3-4/18-25; P.1/4-5; V.6; A.7-10/8-12; C.10-11, or B.6; D.1/3-4, 2D+C+2A, 18-25+10-11+8-12; 1A.7-10; P.1/4-5; V.6.

Body flat, vertically compressed. Head covered with soft skin, exceedingly large, broad, depressed, width equal to its length, behind the angle of mouth, 3·0; depth 6·0 in total length (2·5 and 5·1 in standard length). Snout 3·5 in head. Eyes subcutaneous, minute, in the anterior fourth of head, 17·0 in head, 5·0 in snout, 6·5 in interorbital; interorbital 2·8 in head. Mouth very wide. Maxillary, outer and inner mandibular barbels very small. Teeth villiform in both jaws; palate edentulous. Median longitudian groove on head deep, extending to base of occipital process. Occipital process extending to the basal bone of dorsal. Gill openings narrow, not extending to lower side of head, gill membranes confluent with broad isthmus. Two rayed dorsal fins, the first dorsal, with a strong spine serrated on both edges and with 3 or 4 rays; origin of the first dorsal nearer to the second dorsal than to snout end and 2 eye diameters before pelvic origin; the second dorsal confluent with caudal, with 18-25 rays; origin about an eye diameter behind anal origin. Pectorals 2·4 in head, not reaching pelvics, with a strong spine, serrated internally, roughened externally. Pelvics not reaching anal, 3·5 in head; origin 2·0 eye diameters behind first dorsal origin, slightly nearer to pectoral base than to first anal origin. Two rayed anal fins with 7-10 rays; origin an eye diameter before second dorsal fin; first anal separated from the second anal fin by a distance equal to 2·0 eye diameters, second anal fin with 8-12 rays, confluent with caudal; origin 2·0 eye diameters behind last ray of first anal fin. Caudal rounded, 2·0—2·6 in head, 6·0—8·0 in total length. Body and head in Indian specimens with short tentacles, a ring of them round the eyes and several along the edge of lowre jaw; few tentacles along the lateral line. Lateral line.

Brownish marbled with darker.

It attains 203 mm. in length; in freshwater.

Distribution.—India : Duars and Terai, Bengal, Dibrugarh, Assam. Bangladesh. Nepal. Burma : Mandalay.—Malaya, Malacca, Mawai Dt. Johore, Sumatra, Borneo, Banka; in the latitudinal and longitudinal range of 25° 9′—27° 42′ N., 85° 12′—96° 8′ E., in the Indian region and 0° 00″—5° 25′ N., 100° 20′—113° 30′ beyond Indian region.

LII. Family CLARIIDAE

Body elongate subcylindrical. Head depressed, covered with osseous plates, or globular, covered with skin. Snout depressed or truncated. Eyes lateral, with free orbital margins, or absent. Nostrils wide apart, anterior tabular, posterior slit-like behind nasal barbel. 4 pairs of barbels. Mouth transverse, terminal, upper jaw slightly longer or subvertical lower jaw longer. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic band or coalesced with the premaxillary band of teeth. Gill openings wide or moderate; gill membranes free from isthmus or united with it. An accessory dendritic apparatus attached to second third and fourth branchial arches within a recess above and behind gill, or vestigial as 2 small bony structures corresponding to second and fourth brancial arches. Median longitudinal groove on head present or absent. Occipital process not reaching basal bone of dorsal. A long rayed spineless dorsal extending to caudal, united or not united with caudal; no adipose dorsal. Pectorals with a strong spine serrated on both edges or vestigial. Pelvics with 6 rays. Anal long, spineless, extending to caudal, united or not united with caudal. Caudal rounded, united or not united with dorsal and anal. Air bladder sheathed or not sheathed in bony capsule. Branchiostegals 7-11.

Lower Pliocene to recent.

The family CLARIIDAE is represented by two genera in the Indian region.

Key to the genera of family CLARIIDAE

1. Eye absent; pectorals vestigeal; accessory dendritic apparatus not well developed **Horaglanis**

2. Eye present; pectorals normal; accessory dendritic apparatus normal **Clarias**

139. Genus **Clarias** Scopoli

1763. *Clarias* Gronov, *Zooph. Zoophyl. Gronov... ...Animal.* p., 100 (type, *C. marpus V.=Silurus batrachus* L., logotypic; inadmissible).

1777. *Clariaas* Scopoli, *Intr. Hist. nat. Prague*, P. 455, (type, *C. marpus* V.=*Silurus batrachus* L., logotypic).

1803. *Macropteronotus* Lacépède, *Hist. nat. Poiss.*, 5, p. 84 (type, *M. charmuth* Lac.=*Silurus anguillaris* L.).

1844. *Cossyphus* (*nec* Valenciennes, 1839) Mc Clelland, *J. nat. Hist. Calcutta*, 4, p. 403 (type, *C. ater* Mc Clell. ; inadmissible).

1844. *Phagorus* Mc Clelland, *J. nat. Hist. Calcutta*, 4, p. 403, (type, *C. ater* Mc Clell.=*Macropteronotus jagur* Ham.).

Body elongate, subcylindrical to pelvics, compressed behind. Head depressed, covered with osseous plates. Eyes small, superior, with free orbital margins. Snout normal. Nostrils wide apart, anterior short, tubular, posterior slit-like, behind nasal barbel. Mouth transverse, terminal, upper jaw longer. 4 pairs of barbels. Teeth villiform in band in jaws; vomerine teeth villiform, in crescentic band. Median longitudinal groove on head present. Occipital process not touching basal bone of dorsal. Gill openings wide, gill membranes free from isthmus. An accessory dendritic organ, well developed, attached to second, third and fourth branchial arches. A long rayed dorsal without spine, extending to caudal, confluent or non-confluent with caudal. No adipose dorsal. Pectorals low, with a strong spine serrated on both edges. Pelvics small, with 6 rays. Anal long, extending to caudal confluent or non-confluent with caudal. Caudal rounded, united with anal and dorsal or not united with anal and dorsal. Air bladder small, sheathed in bony capsule. Branchiostegals 7-9.

Distribution.—India, Pakistan, Bangladesh, Nepal, Burma, Sri Lanka, Malaya, Thailand, Indonesia, Philippines.

Key to species of genus **Clarias** Scopoli

1. Distance between occipital process and dorsal origin 4·5—5·5 in distance between snout end and occipital process	*C. batrachus*
2. Distance between occipital process and dorsal origin 2·5—3·5 in distance between snout end and occipital process	3

3. Snout pointed; nasal barbels less than half length of head to occipital process; pectoral spine strongly serrated externally; distance between occipital process and dorsal origin 2·5 in distance between snout end and occipital process .. .. .. *C. dayi*

4. Snout broad; nasal barbels longer than half length of head to occipital process; pectoral spine strongly serrated or roughened only externally; distance between occipital process and dorsal origin 2·6—3·5 in distance between snout end and occipital process 5

5. Pectoral spine strongly serrated externally; occipital process 2·5 times as broad as long; vomerine band as broad as premaxillary band *C. dussumieri*

6. Pectorals spine roughened externally, occipital process 1·5 times as broad as long; vomerine band, narrow not as broad as premaxillary band *C. brachysoma*

334. Clarias batrachus (Linnaeus)

(Text-fig. 23)

1758. *Silurus batrachus* Linnaeus, *Syst. Nat.*, ed. 10, **1**, p. 305 (type locality : Asia, Africa).

1794. *Silurus batrachus* Bloch, *Natur. Ausland. Fische*, **8**, p. 44, pl. 370, fig. 1 (Tranquebar).

1803. *Silurus anguillaris* Russell, *Fish. Coromandel*, **2**, p. 53 (type locality : Vizagapatam).

1803. *Marpoo* Russell, *Fish. Coromandel*, **2**, p. 53, pl. 108 (type locality : Vizagapatam).

1822. *Macropteronotus jagur* Hamilton, *Fish. Ganges*, pp. 145, 374, (type locality : Ganges).

1822. *Macropteronotus magur* Hamilton, *Fish. Ganges*, pp. 146, 374, pl. 26, fig. 45 (Ganges).

1840. *Clarias puntatus* Valenciennes, *Hist. nat. Poss.*, **15**, p. 384.

1849. *Clarias magur* Jerdon, *Madras J. Lit. Sci.*, p. 342 (Malabar & Bengal).

1849. *Clarias batrachus* Jerdon, *Madras J. Lit. Sci.*, p. 342 (Tranquebar).

1864. *Clarias magur* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 17 (Bengal, Khasi Hills, Khasy, Calcutta, Penang, East Indian Archipelago).

1864. *Clarias jagur* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 21.

1877. *Clarias jagur* Day, *Fish. India*, p. 484.

1877. *Clarias magur* Day, *Fish. India*, p. 485, pl. 112, figs. 5, 5a (fresh and brackish waters of the plains of India, Burma, and Ceylon, and the Malay Archipelago).

1877. *Clarias assamensis* Day, *Fish. India*, p. 485 (type locality : Goalpara and as high Suddya, Upper & Lower Assam).

1889. *Clarias magur* Day, *Fauna Brit. India*, Fish., **1**, p. 115, figs. 48, 49.

1889. *Clarias assamenis* Day, *Fauna Brit. India, Fish.*, **1**, p. 117.

1890. *Clarias magur* Vinciguerra, *Pesci di Birmania*, p. 63. (Rangoon Mandalay, Bhamo).

1913. *Clarias batrachus* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 190, fig. 74 (Java, Sumatra, Singapore, Banka Borneo).

1931. *Clarias magur* Chu, *Biol. Bull. St. John's Univ.*, No. **1**, p. 83 (Hongkong, China).

1936. *Clarias batrachus* Hora, *Rec. Indian Mus.*, **38**, p. 351, text-fig. 4a.

1936. *Clarias batrachus* Suvatti, *Index Fish Siam*, p. 82am, Bangkok).

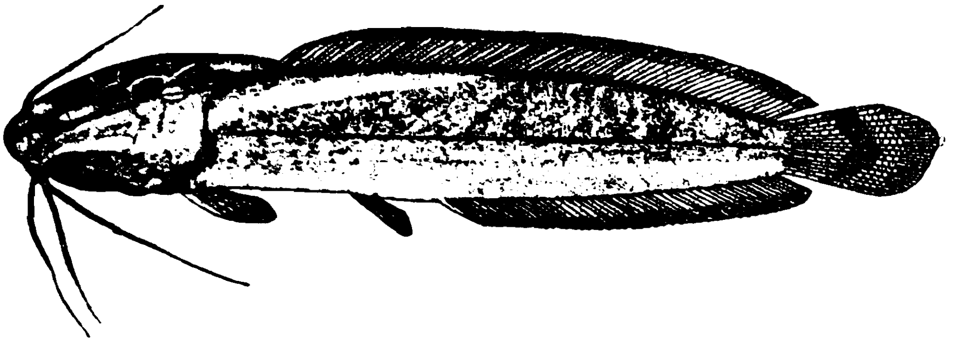
1936. *Clarias batrachus* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 32 (throughout M.P. & Bombay provinces).

1938. *Clarias batrachus* Fowler, *List Fish. Malaya*, p. 43 (Telan Stream, Penang, Singapore).

1938. *Clarias batrachus* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** (1937), p. 80 (Terai & Duars; usually in mud).

1941. *Clarias betrachus* Hora & Law, *Rec. Indian Mus.*, **43**, p. 238 (Travancore).

1953. *Clarias batrachus* Herre, *Check list Philippine Fish.*, p. 135 (Philippines).



TEXT-FIG. 23.—*Clarias batrachus* (L.) (After F. Day)

Vernacular names.—INDIA. *Mah-gur*, Assamese; *Magur*, *Mah-gur*, Bengali;*Mangri*, Bihar. *Yeri-vahlay*, Malayalam; *Wagur*, *Mangir*, M.P., *Nga-hora*, Manipur, *Magurah*, Oriya; *Kugga*, Punjab. PAKISTAN : *Kugga*. BANGLADESH: *Magur*. BURMA : *Nga-khoo*, *Nga-khu*.

B.9; D.62-76; P.1/8-11; V.6; A.45-58; C.14-17.

Body elongate, subcyndrical to pelvics, compressed behind. Head moderalitelydepressed, shagreened superiorly, covered with fine granules; width equal to its length, 5·6—6·2; depth 6·5—7·5 in the total length. Snout 3·5 in head. Eyes small, superior, with free orbital margins, the anterior third of head, 8·0—10·0 in head, 2·0—2·5 in snout; interorbital 2·0—2·5 in head. Nostrils wide apart, anterior tubular, posterior with the nasal barbels. Mouth terminal, transverse; gape of mouth equalling 1/3—4/9 of the length of head, upper jaw the longer. Maxillary barbels extending to the pectoral, the outer and inner mandibular barbels shorter, the nasal barbels equal to mandibular barbels. Teeth villiform in band in jaws; vomerine teeth villiform or obtuse, in continuous band or 2 pyriform bands, narrow or equal to the depth of premaxillary band. Gill openings wide, membranes free from isthmus separated from each other by a deep notch. An accessory, dendritic, respiratory apparatus in a recess above and below the gill cavity attached to the convex side of the second, third and fourth branchial arches. Frontal fontanel oblong, its first fourth between the eyes; the occipital fontanel, midway between the posterior extremity of occipital fontanel and end of occipital process. The occipital process twice as broad as long. The distance between the occipital process and dorsal origin 4·5—5·5 in the length of head to the end of occipital process. Dorsal fin without spine, free or continuous (damaged specimen) with caudal fin; origin about ½ eye diameter before the end of pectoral fin. Pectorals not reaching pelvics, 2·0 in head, with a strong spine finely serrated on both edges or rough externally, serrated internally, equal to 2/7 of the distance between snout end and occipital process and 3·0 in head. Pelvics small, reaching or not reaching anal, 2·4 in head; origin about snout length behind dorsal fin. Anal long free or confluent with caudal. Caudal laceolate or round, 1·3 in head, 7·2—8·0 in total length. Lateral line.

Skin smooth. Dingy green or brownish green above, becoming lighter below; dorsal, anal and caudal fringed red.

It attains 457 mm. in length; in fresh and brackish waters.

Distribution.—India : Bombay, Maharashtra, Punjab, U.P., Bihar, the Ganga, Calcutta, Duars, W. Bengal, Terai and Andhra, Assam, Malabar, Kerala, Tranquebar, Madras, Vishakhapatnam, Orissa, M. P. Pakistan. Bangladesh. Nepal. Burma : Rangoon, Mandalay, Bhamo. Sri Lanka.—Malaya, Thailand, Indonesia, Philippines; in the latitudinal and longitudinal range of 7°-31° 37′ N., 62° 20′-97° 17′ E., in the Indian region and 16° N.-6° 12′ S., 102°-121°30′ E. beyond Indian region.

335. **Clarias brachysoma** Günther

1864. *Clarias teysmanni* (*nec*. Bleeker) Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 19 (Java; Ceylon).

1864. *Clarias brachysoma* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 20 (type locality : Ceylon).

1877. *Clarias teysmanni* (*nec.* Bleeker) Day, *Fish. India*, p. 484 (Ceylon & Java).

1889. *Clarias teysmanni* (*nec.* Bleeker) Day, *Fauna. Brit. India, Fish*, **1**, p. 116.

1936. *Clarias brachysoma* Hora, *Rec. Indian. Mus.*, **38**, p. 357, figs. 2a, 4b.

1955. *Clarias teysmanni brachysoma* Munro, *Mar. Freshwater Fish. Ceylon*, p. 50 (in muddy streams and ponds).

Vernacular names.—SRI LANKA : *Kaha magura, Magura, Vel magura,* Singhalese.

B. 9; D. 70-77; P. 1/7-10; V. 6; A. 53-63; C.17.

Body elongate, subcylindrical to pelvics and compressed behind. Head depressed, covered with osseous plates dorsally and laterally; width equalling its length, 5 ·0-5 ·8; depth 6 ·5—8 ·4 in total length (4 ·6—5 ·3 in standrad length). Snout rounded, 3 ·0 in head. Eyes small, superior, in the second third of head to the end of occipital process, with free orbital margins. Nostrils wide apart, anterior tube-like, posterior with the nasal barbels. Mouth terminal, transverse. Maxillary barbels extending to the end of pectoral, the outer and inner mandibular barbels shorter, the nasals as long as or shorter than head. Teeth villiform in band in jaws; vomerine teeth obtuse, in crescentic band about equal to width of premaxillary band at its centre. Gill openings wide; gill membranes free from isthmus and separated from each other by a deep notch. An accessory dendretic respiratory apparatus in a recess above and behind the gill cavity attached to convex side of the second third and fourth branchial arches. Occipital process 2/3 as long as broad at its base. The distance between the snout end and end of occipital process less than 3 times the distance between dorsal fin origin and end of occipital process. Dorsal long, without spine; origin opposite to the ends of pectoral. Pectorals 1 ·2 in head with a strong spine, more than 2/3 the length of pectoral, 2 ·0 in head, reaching anal origin; origin about half head length behind dorsal origin. Anal long, free from caudal; origin 3/4 of head length behind dorsal origin and beginning of second fourth of dorsal. Caudal rounded, 1 ·5 in head, 7 ·5-8 ·7 in total length.

Skin smooth. Olive green brown or yellow with small irregular black dots of the size of an eye.

It attains 305 mm. in length; in freshwater.

Distribution.—Sri Lanka.—Java; in the latitudinal and longitudinal range of 7°N., 81° E. in Sri Lanka and 6° 12′ S., 106° 36′ E. in Java.

336. Clarias dayi Hora

1936. *Clarias dayi* Hora, *Rec. Indian Mus.*, **38**, pp. 350, 351, text-fig. (type locality: Wynaad).

B. 9; D. 69-70; P. 1/8; V. 6; A. 50-59; C. 16.

Body elongate, subcylindrical to pelvics, compressed behind. Head depressed, covered with osseous plates dorsally and laterally; width equalling its length, 6·0; depth 8.7 in total length. Snout pointed. Eyes small, superior, in the anterior third of the distance between occipital process and snout end, with free orbital margins, interorbital equal to half head. Mouth transverse, terminal. Maxillary barbels not reaching pectoral base; outer and inner mandibulars shorter, the nasal barbels 3·0 eye diameters and shorter than half head. Teeth villiform in band in jaws; vomerine teeth with globular heads, in a continuous crescentic band much wider than the premaxillary band. Gill openings wide, gill membranes free from isthmus, separated from each other by a deep notch. An accessory dendritic respiratory apparatus in a recess above and behind gill cavity attached to the convex side of the second, third and fourth branchial arches. The frontal fontanel oblong extending opposite the anterior margin of eye, the occipital fontanel oval, midway between frontal fontanel and occipital process. Occipital process 3·5 in its width. The distance between dorsal orgin and occipital process 2·7 in the length of head to the end of occipital process. Dorsal long, without spine, free from caudal; origin behind end of pectoral fin. Pectorals equal to half the distance between pectoral and pelvics base, with a strong spine equal to half the distance between occipital process and snout end, strongly serrated externally and with a few recurved spines near its extremity, feebly serrated internally. Pelvics small, not reaching anal. Anal long, free from caudal. Caudal free from dorsal and anal fins. Lateral line.

Skin smooth.

It attains 178 mm. in length; in freshwater.

Distribution.—India: Wynaad.

337. **Clarias dussumieri** Valenciennes

1840. *Clarias dussumieri* Valenciennes, *Hist. nat. Poiss.*, **15**, 382 (type locality : Pondicherry ; Malabar).

1849. *Clarias dussumieri* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 342 (tanks and ditches in Malabar).

1877. *Clarias dussumieri* Day, *Fish. India*, p. 484 (Malabar & Pondicherry).

1889. *Clarias dussumieri* Day, *Fauna Brit. India*, Fish., 1, p. 117.

1941. *Clarias dussumieri* Hora, *Rec. Indian Mus.*, **43**, p. 113, text-fig. 6.

B.9; D.66-69; P.1/10-11; V. 6; A. 45-59.

Body elongate, subcylindrical to pelvics, compressed behind. Head depressed, covered with osseous plates dorsally and laterally; height 1 ·5-1 ·7 in its length and as broad as long, 6 ·0; depth 8 ·4-9 ·4 in total length; the length of head to end of occipital process 4 ·5 in total length. Snout 2. 7-3. 2 in head. Eyes small, superior, with a free orbital margins, 8 ·0-10 ·0 in head, 2 ·7-3 ·2 in snout, 1 ·8 in interorbital. Nostrils wide apart, anterior short, tube-like, the posterior rounded, slit-like, behind nasal barbels. Mouth transverse terminal; width of mouth almost equal to postorbital part of head and less than interorbital. Maxillary barbels extending beyond pectoral base, the outer mandibular barbels to pectoral base, the inner mandibular barbels shorter, the nasal barbels to occipital fontanel. Gill openings wide, gill membranes free from isthmus and separated from each other by a deep notch. An accessory dendritic respiratory apparatus in recess above and behind the gill cavity attached to the convex side of the second, third and fourth branchial arches. Teeth villiform in jaws, in upper jaw as a continuous band 1/5 as broad as long; in lower jaw grouped in 2 contiguous patches, produced backwards at the sides; the vomerine teeth obtuse in a wide crescentic band as broad as premaxillary band. The frontal fontanel wide as long as broad, extending to the anterior margin of eye; the occipital fontanel oval, much shorter. Occipital process broadly rounded, considerably less than half its length at the base. The distance between dorsal origin and end of occipital process 2 ·6-3 ·5 in the length of head to the end of occipital process. Dorsal long, without spine; origin opposite the end of pectoral, separated from caudal by a distinct notch. Pectorals 1 ·3-1 ·6 in head, not reaching pelvics with a strong spine, 1 ·8-2 ·4 in head, conspicuously serrated externally, with a few small teeth only in the middle internally. Pelvics 2 ·0-2 ·4 in head, reaching beyond anal origin. Anal long, separate from caudal; origin below dorsal fin. Caudal rounded, 1 ·1-1 ·5 in head, 6 ·6-9 ·0 in total length. Latera line.

Skin smooth. Dark above, lighter below.

It attains 253 mm. in legnth; in freshwater.

Distribution. —India: Kerala and Pondicherry.

140. Genus **Horaglanis** Menon

1950. *Horaglanis* Menon, *Rec. Indian Mus.*, **48**, p. 60 (type, *H. krishnia* Menon, orthotypic).

Body narrow, elongate, subcylindrical. Head globular, devoid of bony shield. Snout truncated. Eyes absent. Mouth wide, subvertical, upturned, crescentic, lower jaw the longer. Nostrils minute, the anterior placed close to the tip of snout, widely separated, the posterior behind the nasal barbel wide apart from each other and from the anterior ones. 4 pairs of barbels, nasal, maxillary, mandibular and mental. Teeth villiform in band in jaws; in upper jaw as a broad curved band; in the lower jaw as two contiguous patches produced backwards. No median longitudinal groove on head. Gill openings wide extending above pectoral base; gill membranes united with the isthmus. Dendritic apparatus vestigial. A long rayed dorsal without spine extending to the caudal base; no adipose dorsal. Pectoral vestigial. Pelvics with 6 rays well developed behind dorsal origin. A long rayed anal shorter than dorsal, extending to caudal base. Caudal rounded not confluent with dorsal and anal. Air bladder bag-like, broader than long slightly notched at the anterior end not enclosed in bony sheath. Skin smooth. Branchiostegials 11.

Distribution. —Kottayam, Kerala, India.

338. **Horaglanis krishnai** Menon

(Pl. II, figs. 3-5)

1950. *Horaglanis krishnai* Menon, *Rec. Indian Mus.*, **48**, p. 64, text-figs. 2, 3, Pl. 1, figs. 1—3 (type locality : well at Kottayam, Kerala; type in the Zoological Survey of India, Calcutta).

B.11, D. 23 (21/1/1); P. vestigal; V. 6 (2/3/1); A. 17 (15/I/1); C. 24 (viii+8+viii).

Body elongate, narrow, somewhat subcylindrical; dorial and ventral profiles nearly horizontal. Head glabular, devoid of bony shield; width less than and height equal to its length, 6.4; depth 9·1 in total length (5·6 and

7·7 in the standard legnth). Snout truncated by subvertical mouth. Eyes absent. Mouth wide, upturned, crescentic, extending across the entire width of snout, lower jaw slightly longer; gape of mouth 1·8 in width of head. Maxillary and outer mandibular barbels 1·2 times head, extending beyond pectoral end; the inner mandibular and nasal barbels 1·0-1 1 in head. Teeth villiform in band in jaws, in upper jaw a broad deeply curved band; in lower jaw the band consisting of 2 contiguous patches produced backwards. No median groove on head. Dorsal long, its longest ray 1·6 in head, extending to base of caudal; origin in the second fourth of total length and 4 dorsal rays before pelvic origin; base 1·9 in total length; no adipose dorsal. Pectorals vestigal, 2·5 in first ray of dorsal, consisting of a central axial ray with 6 small rays at distal end and 9 smaller rays on sides. Pelvics reaching beyond vent to anal origin, 1·5 in head, consisting of 6 rays (3rd, 4th and 5th branched and 1st, 2nd and 6th unbranched); origin below fifth of dorsal. Anal long, its longest ray 2·0 in head, extending to base of caudal, consisting of 17 rays of which the 16th being branched; origin below the 10th ray of dorsal, base 3·1 in total length. Caudal rounded, with 24 rays of which the eight central ones being branched and the remaining 16, 8 on each side being unbranched, 7·0 in total length.

Skin smooth. Yellow-white without any pigmentation.

It attains 42 mm. in length; in freshwater.

Distribution.—India: Kottayam, Kerala.

LIII. Family HETEROPNEUSTIDAE

Body elongate, compressed. Head greatly depressed, covered with osseous plates. Snout depressed. Eyes small, lateral with free orbital margins. Nostrils wide apart, anterior tubular, posterior slit-like, behind nasal barbels. 4 pairs of barbels. Mouth small, terminal, upper jaw longer. Teeth villiform, small in broad band in jaws; vomerine teeth villiform, in 2 patches; palate edentulous. A median, longitudinal groove on head; occipital process elongated. Gill opening wide; gill membrane free from isthmus. Gill cavity with an accessory respiratory sac extending backwards in the tail region. A short, spineless rayed dorsal; no adipose dorsal. Pectorals with strong spine. Pelvics with 6 rays. A long, anal, confluent or non-confluent with caudal. Caudal rounded, confluent or non confluent with anal. Lateral line. Air bladder enclosed in bony capsule. Brancheostegals 7.

The family HETEROPNEUSTIDAE is represented by a single genus in the Indian region.

141. Genus **Heteropneustes** Müller

1839. *Heteropneustes* Müller, *Ueber das Gafas Syst. Abh. Akad. Wiss. Berlin*, p. 243 (type *Silurus fossilis* Bl.).

1840. *Saccobranchus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 399 (type, *Silurus singio* Ham., *orthotypic*).

1937. *Clarisilurus* Fowler, *Proc. Acad. nat. Sci. Philad.*, **89**, p. 133 (*type C. kemratensis* Fowler, orthotypic).

Body elongate, compressed. Head depressed, covered with osseous plates. Snout depressed. Eyes lateral, with free orbital margins. Nostrils wide apart, anterior tubular, posterior slit-like behind nasal barbels. 4 pairs of barbels. Mouth small, terminal, transverse, upper jaw slightly longer. Teeth villiform in band in jaws; vomerine teeth villiform in two patches; palate edentulous. Gill openings wide; gill membranes free from isthmus. An accessory respiratory apparatus in the gill cavity extending to the tail region. A short, spineless dorsal; no adipose dorsal. Pectorals with a strong spine. Pelvic with 6 rays. A long anal, confluent or non-confluent with caudal. Caudal rounded, confluent or non-confluent with anal. Lateral line. Air bladder enclosed in bony capsule. Branchiostegals 7.

Distribution.—India, Pakistan, Bangladesh, Nepal, Burma, Sri Lanka,Malaya, Singapore, Thailand, Indonesia, Philippines, China, Hongkong.

The genus **Heteropneustes** is represented by two species in the Indian region.

Key to species of genus **Heteropneustes** Müller

1. Anal confluent with caudal ; dorsal fin with 8 rays	*H. microps*
2. Anal non-confluent with caudal ; dorsal fin with 6-7 rays	*H. fossilis*

339. **Heteropneustes fossilis** (Bloch)

(Text-fig. 24)

1794. *Silurus fossilis* Bloch, *Naturg. Ausland. Fische*, **8**, p. 46, pl. 370, fig. 2 (type locality : Tranquebar).

1822. *Saccobranchus singio* Hamilton, *Fish. Ganges*, pp. 147, 374, pl. 37, fig. 46 (type locality : Ganges river).

1864. *Saccobranchus singio* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 50 (Ganges, Bengal; Cochinchina; adult, half-grown and young from Ganges, presented by G.R. Whitehouse types of the species).

1864. *Saccobranchus fossilis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 51 (Delhi; Nepal; Khasi Hills).

1864. *Saccobranchus macrocephalus* Günther, *Cat., Fish. Brit. Mus.*, **5**, p. 51 (type locality : Ceylon; 10½″ long).

1877. *Saccobranchus fossilis* Day, *Fish. India*, p. 486, pl. 114, fig. 1 (freshwaters of Sind, India, Ceylon, Burma and Cochin China).

1889. *Saccobranchus fossilis* Day, *Fauna Brit. India*, Fish., **1**, p. 125, fig. 53.

1907. *Saccobranchus fossilis* Regan, *Rec. Indian Mus.*, **1**, p. 158 (Kathmandu, Nepal).

1910. *Saccobranchus fossilis* Jenkins, *Rec. Indian Mus.*, **5**, p. 138 (Bhamo).

1913. *Saccobranchus fossilis* Chaudhuri, *Rec. Indian Mus.*, **8**, pp. 244, 255 (Dibrugarh).

1920. *Saccobranchus fossilis* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 358 (Trivandrum).

1936. *Heteropneustes fossilis* Hora, *Rec. Indian Mus.*, **38**, p. 202.

1936. *Saccobranchus fossilis* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 32 (Godavary basin).

1937. *Clarisilurus kemratensis* Fowler, *Proc. Acad. nat. Sci. Philad.*, *89*, p. 133, fig. 5,6 (type locality : Kemrat).

1938. *Heteropneustes fossilis* Shaw & Shebbeare, *J. Roy. As. Soc. Bengal, Sci.*, **3**, (1937) No. 1, p. 81, text-fig. 71 (rivers and tanks in the Terai and Duars).

1938. *Heteropneustes fossilis* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 23 (Deolali).

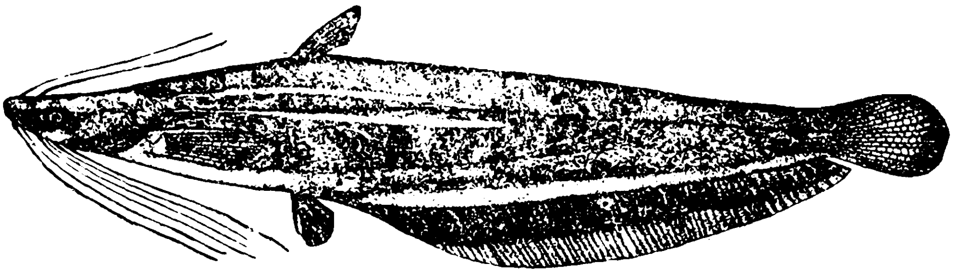
1941. *Heteropneustes fossilis* Hora & Law, *Rec. Indian Mus.*, **43**, p. 238 (Ceylon, India, Burma, Siam, Cochin-China).

1941. *Heteropneustes fossilis* Sen, *J. roy. As. Soc. Bengal, Sci.*, **7**, p. 9 (Salt lake, near Calcutta).

1945. *Heteropneustes fossilis* Smith, *U.S. nat. Mus. Bull.*, 188, p. 345 (Thailand).

1948. *Heteropneustes fossilis* Chacko, *J. Bombay nat. Hist. Soc.*, **48**, p. 191 (Periya lake, 3000 ft. above sea level).

1955. *Heteropneustes fossilis* Munro (*partim*), *Mar. Freshwater Fish., Ceylon*, p. 50, fig. 137 (ponds and tanks).



TEXT-FIG. 24.—*Heteropneustes fossilis* (Bl.) (After F. Day)

Vernacular names.—INDIA : *Singee*, *Sheen-ee*, Assam; *Singhi*, Bengali; *Kamacha Singgi*, Bhagalpur; *Bitchu ka mutchee*, Hindi; *Bitchu*, *Talia*, *Singee* M.P.; *Kahree-meen*, *Theyli*, Malayalam; *Singee*, Oriya; *Lahoord* (young), *Nullie* (adult), Punjab; *Thay-lee*, Tamil; *Marpu*, Telugu; *Singhee*, U.P.; Standardised name: *Singhee*. PAKISTAN: *Lohar*, *Lahoord*, *Nullie*. BANGLADESH: *Singhi*. BURMA : *Nga-gyee*, *Nga kyee*, *Nga-khu*, *Nga-gyi*. SRI LANKA : *Hunga*, *kaha-hunga*, *Lai hunga*, *Vel hunga*, Singhalese; *Shunken*, Tamil.

B.7; D.6-7; V. 6; A. 60-79; C. 19.

Body elongate, subcylindrical to pelvic base, compressed behind. Head depressed, covered with osseous plate; dorsally and laterally; width equalling its length, 6·5; depth 7·5 in total length (5·4 and 6·4 in standard lengths). Snout 3·4 in head. Eyes with free orbital margins, lateral, 10·2 in head, 2·0-3·0 in snout. Nostrils wide apart, anterior tubular, the posterior slit-like, behind the nasal barbels. Mouth small, terminal, transverse,. Maxillary barbels extending to middle of pectoral or to pelvic base; the outer and inner mandibular barbels extending beyond ends of pectoral; the nasal barbels to middle of pectoral. Teeth in villiform band in jaws; the vomerine in two pyriform patches on either side converging anteriorly and widely diverging posteriorly. Gill openings wide; gill membranes free from isthmus; gill cavity with an accessory respiratory apparatus extending backwards to tail region. Dorsal short, without spine, 2·0 in head, in the anterior third of standard length, much nearer to snout end than caudal base. Pectorals 1·2 in head, not quite reaching pelvics, with a strong spine serrated internally, with a few external serrations at the anterior end, 1·5 in head. Pelvics 2·2 in head, reaching or not reaching anal; origin slightly behind or oppposite dorsal origin, much nearer to anal origin than to pectoral base. Anal very long, not confluent with caudal origin, 2 eye diameters behind last dorsal ray; base 2·0 in total length. Caudal rounded, free from anal, 1·4 in head, 9·1 in total length. Lateral line.

Skin smooth. Leaden or dark purplish brown; often with two yellowish lateral bands; young reddish brown.

It attains 305 mm. in length; in freshwater, brackish.

Distribution. —India ; freshwaters and rarely in brackish pools of India, Pakistan, Bangladesh, Nepal, Burma, Sri Lanka, Indochina, Thailand, in the latitudinal and longitudinal range of 7°—31° 37′N., 62° 20′—97° 17′ E. in Indian region and 14°—15° N., 103° —109° E. beyond Indian region.

340. **Heteropneustes microps** (Günther)

1864. *Saccobranchus microps* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 486 (type locality : Ceylon).

1889. *Saccobranchus microps* Day, *Fauna Brit. India*, Fish., **1**, p. 125 (Ceylon; 6″ in length).

1955. *Heteropneustes fossilis* Munro (*partim*), *Mar. Freshwater Fish. Ceylon*, p. 50 *nec*. fig. 137 (ponds and tanks).

B.7; D.8; P. 1/6; V.6; A.70.

Body elongate, subcylindrical to pelvic base, compressed behind. Head depressed, covered with osseous plates dorsally and laterally, 9·0; depth 9·0 in total length (8·3 and 8·0 in standard length). Eyes lateral, with free orbital margins, 3·0 in snout, much smaller than in *H. fossilis*. Mouth small, terminal, tranverse. Maximallary barbels extending to pelvics, outer and inner mandibular and nasal barbels reaching the end of pectoral fin. Teeth villiform in band in jaws; vomerine band interrupted in the middle. Gill openings; gill membrane free from isthmus; gill cavity with an accessory respiratory apparatus extending backwards to tail region. Dorsal short, without spine; origin in the anterior 2/7 of standard length, much nearer to snout end than to caudal base. Pectorals with a moderately strong spine, feebly serrated, 1·5 in head. Pelvics small, reaching anal origin. Anal very long, confluent with caudal; origin behind last dorsal ray. Caudal rounded, confluent with anal. Lateral line.

Brown.

It attains 152mm. in length; in freshwater, brackish.

Distribution.—Sri Lanka.

LIV. Family OLYRIDAE

Body elongate, subcylindrical. Head depressed, covered with skin. Eyes small, superior, subcutaneous. Nostrils wide apart, the posterior with the nasal barbels. 4 pairs of barbels. Mouth terminal, transverse. Teeth villiform in band in jaws and palate. Gill openings wide; gill membranes free from isthmus. Rayed dorsal with spine. An adipose dorsal. Pectorals with a spine serrated in both eyes. Pelvics with 5-9 rays. Anal with 15-23 rays. Caudal rounded, lanceolate or forked. Skin smooth. Lateral line. Branchiostegals 6-13. Air bladder dorsally and laterally protected by extensions of transverse processes of compound vertebra.

The family OLYRIDAE is represented by a single genus in the Indian region.

142. Genus **Olyra** Mc Clelland

1842. *Olyra* Mc Clelland, *J. nat. Hist. Calcutta*, **2**, p. 588 (type, *O. longicaudata* Mc Clelland, logotypic).

1862. *Branchiosteus* Gill, *Proc. Boston. nat. Hist. soc.*, **8**, p. 52 (type *Olyra laticeps* Mc Clell., orthotypic).

Body elongate, subcylindrical, compressed behind pelvics. Head depressed, covered with skin. Snout depressed or spatulate, broadly rounded or pointed. Eyes small superior subcutaneous. Nostrils remote from each other, posterior one with a nasal barbels, 4 pairs of barbels. Mouth terminal, transverse, jaws subequal or upper or lower jaw longer. Teeth villiform in band in jaws and on palate. Gill openings wide; gill membrane free from isthmus. Rayed dorsal without spine; adipose dorsal confluent or non-confluient with caudal. Pectorals above level of pelvics, with spne serrated on both edges. Pelvics with 5-9 rays. Anal with 15-23 rays. Caudal rounded, lanceolate or forked. Lateral line. Skin smooth. Glandular openings on head, chest and along lateral line present or absent. Air bladder partially covered by extensions of transverse processes of compound vertebra. Branchiostegals 6-13.

Distribution. —India, Burma.

The genus **Olyra** is represented by five species in the Indian region.

Key to species of genus **Olyra** Mc Clelland

1. Least height of caudal peduncle 2·7 in its length; lower jaw the longer; pelvics reaching anal; caudal entire, with central rays slightly prolonged (neither lanceolate nor forked.)	*O. laticeps*
2. Least height of caudal peduncle 1·3-2·2 in its length; jaws subequal or upper jaw the longer; pelvics not reaching anal; caudal lanceolate or forked	3
3. Caudal lanceolate	5
4. Caudal deeply forked	7
5. Least height of caudal peduncle 2·2 in its length; anal rays 23	*O. longicaudata*
6. Least height of caudal peduncle 1·6 in its length; anal rays 16	*O. burmanica*
7. Adipose dorsal continuous with caudal; rayed dorsal origin midway between snout end and adipose dorsal: jaws subequal; least height of caudal peduncle 1·3 in its length: anal rays 21	*O. horai*
8. Adipose dorsal not continuous with caudal; rayed dorsal origin nearer to adipose dorsal than to snout end; upper jaw the longer; least height of caudal peduncle 1·8 in its length; anal rays 17-18	*O. kempi*

341. **Olyra burmanica** Day

1871. *Olyra burmanica* Day, *Proc. zool. Soc. Lond.*, p., 711 (type loc. : Pegu Yomas).

1877. *Olyra burmanica* Day, *Fish India*, p. 475, pl. 111, fig. 5.

1889. *Olyra burmanica* Day, *Fauna Brit. India*, Fish., **1**, p. 121, fig. 31.

1890. *Olyra burmanica* Vinciguerra, *Pesci di Birmania*, p. 68 (Pegu Yoma).

1936. *Olyra burmanica* Hora, *Rec. Indian Mus.*, **38**, p. 207.

D. 1/7/0; P. 1/4; V. 1/6; A. 16 (3/13); C. 17.

Body elongate, subcylindrical. Head depressed, covered with soft skin 10.2, depth 11·0 in total length (6·5 and 7·5 in standard length). Snout pointed, 2·8 in head. Eyes small, subcutaneous, superior, in the anterior half of head, above the level of angle of mouth, 9·3 in head, 3·3 in snout. Nostrils remote from each other; posterior one with a nasal barbel, in front of it the anterior just over snout. Mouth terminal, transverse, jaws subequal. Maxillary barbels without dilated bases, extending to pelvic base; the outer mandibular barbels as long as head, the inner mandibulars shorter, the nasals 2·0 eye diameters. Teeth villiform in band in jaws; a continuous horse-shoe shaped band on palate. No corrugations on chest. Gill openings wide, extending to ventral surface; gill membranes free from isthmus, notched nearly to the chin. Rayed dorsal without a spine, 1·2 in head; origin nearer to adipose dorsal origin than to pectoral base and snout end; adipose dorsal base 2·5 times rayed dorsal base, extending opposite to last anal ray; interdorsal 2·0 in adipose dorsal base. Pectorals above level of pelvics, 1·3 in head, with moderately strong spine slightly serrated externally, strongly denticulated internally, not reaching pelvics. Pelvics 1 1 in head, not reaching anal; origin an eye diameter before rayed dorsal origin, nearer to pectoral base than to anal origin. Anal 1·2 in head; rays increasing in length to the last; base 2·0 times rayed dorsal base origin nearly ½ snout length behind adipose dorsal origin, midway between pelvic origin and caudal base. Caudal lanceolate with central rays elongated, 3·0 in total length. Least height of caudal peduncle 1·6 in its length. Lateral line.

Skin smooth. Dark brown lighter below. Air bladder large thin in the abdominal cavity.

It attains 113 mm. in length; in freshwater.

Distribution. —Burma.

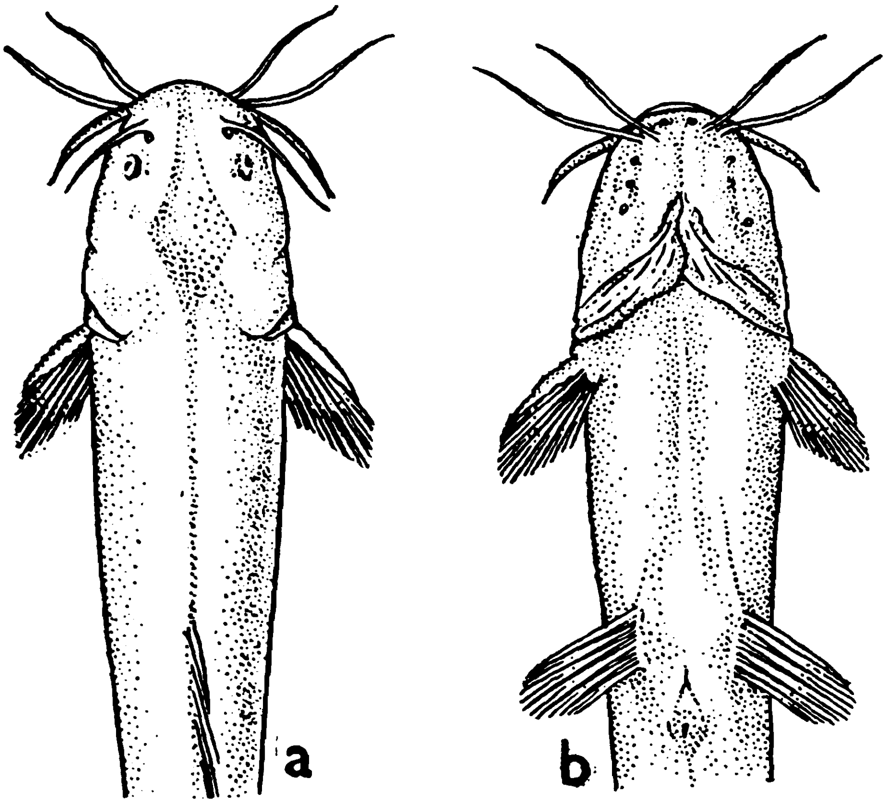
342. **Olyra horai** (Prashad & Mukerji)

(Text-fig. 25)

1929. *Amblyceps horai* Prashad & Mukerji, *Rec. Indian Mus.*, 31, p. 173, p. 7, fig. 1, text-fig. 1 (shallow parts of the Indawgyi lake along its western shore near Loimon village, Myitkyina Dt.; type in the Zoological Survey of India).

[1933. *Amblyceps horai* Mukerji, *J. Bombay nat. Hist. Soc.*, 36 p. 819 (error; referable to genus *Olyra*).

[1936. *Olyra horai* Hora, *Rec. Indian Mus.*, 38, p. 207.



TEXT-FIG. 25.—*Olyra horai* (Prashad & Mukerji)
(*a*) Dorsal view of head and anterior part of body
(*b*) Ventral view of head and anterior part of body
(After B. Prashad & D. D. Mukerji)

D.1/7/0; P. 1/7; V.1/5; A. 10/11; C.17.

Body elongate, subcylindrical, compressed, behind pelvics. Head depressed, covered with soft skin, 7·0-8·0;

depth 9·2-10·2 in total length (5·6-6·6 and 7·6-8·7 in standard length). Snout broadly rounded 2·8 in head, equal to interorbital. Eyes small, superior, subcutaneous, in the anterior half of head, 8·8 in head, 3·0 in snout and in interorbital. Nostrils wide apart, the posterior with nasal barbel. Mouth terminal, transverse, jaws subequal; lips fleshy; a row of open pores along margin of lower jaw, and a few scattered one laterally along cheeks. Maxillary barbels without broad base, barely reaching pectoral, outer mandibular barbels longer than inner mandibulars, the nasals to the hind border of preopercle. Teeth villiform in band in jaws; a continuous band on palate. No corrugation between pectoral and pelvic bases. Gill openings wide, extending to the ventral surface; gill membranes free from isthmus, notched medianly. Rayed dorsal without spine, 1·8 in head; origin midway between adipose dorsal origin and snout end; adipose dorsal low, continuous with caudal, base equal to rayed dorsal base; interdorsal 1·4 times adipose dorsal base. Pectorals above level of pelvics, 1.6 in head, not reaching pelvics, with a spine serrated on both edges. Pelvics not reaching anal, 1·4 in head; origin an eye diameter behind rayed dorsal origin, midway between pectoral base and anal origin. Anal with rays increasing in length to the last 2.2 in head;origin about a snout length behind last dorsal ray and a head length before adipose dorsal origin, origin nearer to pelvic origin than caudal base, or midway between pectoral and caudal bases. Caudal deeply forked, upper lobe slightly longer, 1·3 times head, 5·3-6·1 in total length; least height of caudal peduncle 1·3 in its length. All fin rays enveloped in thick skin. Lateral line.

Skin smooth. Brownish above, paler below; minute black spots scattered over body; fins dirty white, caudal greyish.

It attains 84 mm. in length; in freshwater.

Distribution. —Burma.*

343. **Olyra kempi** Chaudhuri

1912. *Olyra kempi* Chaudhuri, *Rec. Indian Mus.*, 7, p. 443, pl. 41, figs, 4, 4a, 4b. (type locality : Mangaldai, (Assam) Bhutan frontier); the biggest specimen 54 mm. in standard length).

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*Pillai and Yazdani (1971, *J.zool. Soc. India*, 23(2) p. 135) recorded the species from the Garo hills, Meghalaya.

1936. *Olyra kempi* Shaw & Shebbeare, *J. roy As. Soc. Bengal, Sci.*, 3, p. 94, text-fig. 94 (rivers of Terai and Duars.).

Vernacular names.—INDIA : *Bot-singhi*, Bengali; *Tara-ranji*, Mechi; *Na-hongsher*, Rabha.

D.7-0; P. 1/4-6; V.6; A. 17-18; C. 15-16.

Body elongate, subcylindrical, compressed behind pelvics. Head depressed, covered with soft skin, 7·5; depth 12·0 in total length (5·5 and 9·1 in standard length). Snout spatulate, 2·8 in head. Eyes moderate, subcutaneous, superior, in the anterior half of head, 4·5-5·0 in head, 1·5-2·0 in snout, 2·0 in interorbital. Nostrils wide apart, the posterior with nasal barbel. Mouth terminal, transverse, upper jaw slightly longer. Maxillary barbels extending to pectoral end, outer mandibulars half of maxillaries, inner mandibular and nasal barbels 2·0 in head. Teeth villiform in band in jaws; a continuous band on palate. No corrugations between pectoral and pelvic bases. Gill openings wide, extending to the ventral surface; gill membranes free from isthmus. Rayed dorsal without spine, 2·2 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base, extending an eye diameter before last anal ray; interdorsal 2·0 times adipose dorsal base. Pectorals above the level of pelvics, 1.3 in head, not reaching pelvics, with a spine having about 15 serrations on both edges, anterior fourth of spine not serrated. Pelvics not reaching anal, 1·4 in head; origin an eye diameter before a rayed dorsal origin, equidistant between pectoral base and anal origin. Anal 3·5 in head, rays subequal, origin a snout length before adipose dorsal origin nearer to pelvic origin than to caudal base. Caudal forked, with upper lobe elongated, 1.9 times head, 3.9 in total length; least height of caudal peduncle 1·8 in its length. Lateral line.

Skin smooth. Numerous gland openings on head, chest and along the lateral line. Body brown with 3 longitudinal bands; 2 pale brown bands on each side of the lateral line and one dark brown band along the lateral line; abdomen and anal, pectoral, pelvics dorsal fins dull white.

It attains 75mm. in length; in freshwater.

Distribution.—India : Terai Duars, W. Bengal, Assam.

344. Olyra laticeps Mc Clelland

1842. *Olyra laticeps* Mc Clelland, *Calcutta J. nat. Hist.*, 2, pp. 588, 589, pl. 21, fig. 2 (type locality : Kasyah mountains).

1877. *Olyra laticeps* Day, *Fish. India*, p. 475.

1889. *Olyra laticeps* Day, *Fauna Brit. India*, Fish., 1, p. 122 (Khasi Hills).

B. 13; D. 1/6/0; P. 1/8; V.1/6; A.15 (4/11); C. 18.

Body elongate, subcylindrical, compressed behind pelvics. Head depressed, covered with skin, 4·8; depth 11·0 in total length (4·0 and 8·5 in standard length). Snout much depressed, 4·0 in head. Eyes small, subcutaneous, superior, 2·5 in snout, 10·0 in head. Nostrils wide apart, the posterior with nasal barbel. Mouth terminal, lower jaw the longer. Maxillary barbels without broad base, as long as head, reaching gill opening, outer mandibular barbels to postorbit, inner mandibulars shorter, the nasals reaching hind border of eye. Teeth villiform in band in jaws and palate. No corrugations between pelvic and pectoral bases. Gill openings wide, extending to the ventral surface; gill membranes free from isthmus. Rayed dorsal 3·0 in head, without a spine; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·5 times rayed dorsal base, extending snout length behind last anal ray; interdorsal 2·5 in adipose dorsal base. Pectorals above the level of pelvics, 1·8 in head not reaching pelvics, with a strong spine serrated on both edges. Pelvics nearly reaching anal origin, 1·7 in head; origin below last third of rayed dorsal base, nearer to anal origin than to pectoral base. Anal with rays increasing in length to the last, 2·6 in head; origin 2 eye diameters before adipose dorsal origin, a snout length behind last dorsal ray, nearer to pelvic origin than to caudal base, anal base 1·3 times rayed dorsal base. Caudal entire, not forked, middle rays slightly prolonged, 1·4 in head, 6·7 in total length; least height of caudal peduncle 2·7 in its length. Lateral line.

Skin smooth. Olive brown lighter below.

It attains 46 mm. in length; in freshwater.

Distribution.—India : Assam.

345. Olyra longicaudata Mc Clelland

1842. *Olyra longicaudata* Mc Clelland, *J. nat. Hist. Calcutta*, 2, p. 588, tab. 21, fig. 1 (type locality : Khasi Hills).

1864. *Olyra longicaudata* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 98 (Khasya Mts).

1877. *Olyra longicauda* Day, *Fish. India*, p. 475.

1883. *Olyra elongata* Günther, *Ann. Mag. nat. Hist.*, (5)11, p. 139 (type locality : Tenasserim.)

1889. *Olyra longicaudata* Day, *Fauna Brit. India*, Fish., 1, p. 121 (Khasi hills; Tenasserim.).

1890. *Olyra elongata* Vinciguerra, *Pesci di Birmania*, p. 64, pl. 7, fig. 1 (Meetan).

1936. *Olyra longicaudata* Hora, *Rec. Indian Mus.*, 38, pp. 265-267.

1940. *Olyra longicaudata* Hora & Gupta, *J. roy. As. Soc. Bengal, Sci.*, 6, p. 79 (Kalimpong Duars and a portion of Terai in the Siliguri sub-division of the Darjeeling Dt.).

B.6; D.7; P. 1/6; V. 5; A. 23; C. 9/12/3.

Body elongate, subcylindrical, compressed behind pelvics. Head depressed, covered with soft skin, elongate, 7·0; depth 14·0 in total length (5·5 and 11·0 in standard length). Snout 3·3 in head. Eyes small, superior, subcutaneous, in the anterior half of head, behind the angle of mouth and above its level, 10·0 in head, 2·0 in snout, 2·0 in interorbital. Nostrils wide apart, posterior with nasal barbel. Mouth terminal, transverse, jaws subequal, lips fleshy. Maxillary barbels reaching the pectoral base, outer and inner mandibular barbels short, the nasal barbels to posterior margin of eye. Teeth villiform in band in jaws; continuous band on palate. No corrugations between pectoral and pelvic bases. Gill openings wide, extending to the ventral surface; gill membranes free from isthmus. Rayed dorsal as high as body, without spine, 2·0 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·8 times rayed dorsal base, extending about an eye diameter behind last anal ray; interdorsal 2·0 in adipose dorsal base. Pectorals above level of pelvics, 1·3 in head, not reaching pelvics with a strong spine serrated on both edges. Pelvics not reaching anal, 1·4 in head; origin an eye diameter before rayed dorsal origin, nearer to pectoral base than to anal origin. Anal 2·0 in head, rays increasing in length to the last, base 1·4 times rayed dorsal base; origin an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal lanceolate, entire, with central rays elongated, 1·6 times head, 4·3 in total length; least height of caudal peduncle 2·2 in its length. Lateral line.

Skin smooth. Air bladder in the anterior part of abdominal cavity.

It attains 73 mm. in length; in freshwater.

Distribution.—India : Assam, Kalimpong Duars, Darjeeling Duars, W. Bengal, Burma.

LV. Family PLOTOSIDAE

Body elongate, subcylindrical, with tapering tail. Head depressed, covered with skin. Snout depressed, bluntly rounded. Eyes with free orbital margins, lateral. Nostrils wide apart, anterior tubular, in the front border of upper lip, directed upwards or forwards or perforating upper lips, its anterior border directed downwards, posterior slit-like behind nasal barbels. 4 pairs of barbels. Mouth transverse, upper jaw the longer. Teeth villiform in upper jaw; mixed with molariform teeth in lower jaw; vomerine molariform or conical in patch or band. Gill openings wide, gill membranes united or partially united or free from isthmus. Two rayed dorsals, no adipose dorsal; first dorsal short, with a strong spine; the second dorsal (procurrent caudo-dorsal) without spine, uniformly low, confluent with caudal. Pectorals low, horizontal, with weak or a strong spine serrated on both edges. Pelvics with 10-16 rays. A postanal, dendritic apparatus between anal and vent present or absent. Anal long, without spine, confluent with caudal. Caudal pointed or bluntly pointed or rounded, confluent with second dorsal and anal. Lateral line. Air bladder moderate, not enclosed in bony sheath. Branchiostegals 7-13.

The family PLOTOSIDAE is represented by a single genus in the Indian region.

143. Genus Plotosus Lacépède

1803. *Plotosus* Lacépède, *Hist. nat. Poiss.*, 5, p. 128 (type, *Platystacus anguillaris* Bl., orthotypic).

1806. *Plotosis* Dumeril, *Zool. Analytique*, p. 340 (type, *Platystacus anguillaris* Bl.)

1830. *Plotoseus* Lesson *Voy. "Coquille" Zool.*, 2, p. 132 (*P. anguillaris*).

1846. *Plotosius* Schlegel in *Siebold's Fauna Japan. Poiss*, pts. 10—14, p. 228 (type, *Platystacus anguillaris* Bl.)

Body elongate, subcylindrical, with tapering tail. Head depressed, covered with skin. Snout depressed, bluntly rounded. Eyes with free circular margins, lateral, in the anterior half or middle of head. Nostrils wide apart, anterior tubular, the posterior with a nasal barbel. 4 pairs of barbels. Mouth transverse, lips papillated, upper jaw the longer. Teeth conical in band in upper jaw; lower jaw mixed with molariform teeth in band, in 2-5 rows; vomerine teeth molariform or conical, in band or in patches. Gill openings wide; gill membranes free from isthmus. Two rayed dorsals. First dorsal short with a strong spine; the second dorsal without spine (procurement caudo-dorsal) long, uniformally low, united with caudal. No adipose dorsal. Pectorals with a weak or strong spine, serrated on both edges. Pelvics with 11—14 rays. Anal long, confluent with caudal. A dendritic postanal apparatus close behind anal. Caudal bluntly pointed or rounded or pointed. Lateral line. Skin smooth. Gill rakers 20-28. Branchiostegals 11-13. Air bladder moderate, not enclosed in bony capsule.

Distribution.—India, Pakistan, Burma, Sri Lanka,—Red Sea, Seychelles, Natal, Mauritius, Malaya, Singapore, Thailand, Indonesia, Amoy, Hong Kong, Nagasaki, Philippines, British N. Guinea, Australia, Tahiti.

The genus **Plotosus** is represented by two species in the Indian region.

Key to species of genus Plotosus Bleeker

1. 1D. 1/5. 2D+C+A242—271; caudal pointed; second dorsal origin opposite pelvics origin; nasal barbels 3 eye diameters behind posterior border of eye .. *P. canius*

.2 1D. 1/4-5 2D+C+A 169/190; caudal bluntly pointed or rounded; second dorsal origin 1·5 eye diameters before pelvic origin; nasal barbels not extending beyond postorbit *P. arab*

346. **Plotosus arab** (Forskål)*

1775. *Silurus arab* Forskål, *Descript. Animal.*, p. 16, No. 36 (type locality : Red Sea).

1791. *Silurus lineatus* Thunberg, *Kongl. Vet. Acad. Nya. Handl.*, **12**, p. 190 (type locality : Indian Ocean.).

1794. *Platystacus anguillaris* Bloch, *Nat. Ausland. Fische*, **8**, p. 61, pl. 373, fig. 1 (type locality : not given).

1829. *Plotosus ikapor* Lesson, *Dict. Classique Hist. nat.*, **15**, p. 435 (type locality : Offack Bay, Waigiu).

1830. *Plotosus marginatus* Bernett, *Life Raffles Cat. Zool.*, p. 691 (type locality : Sumatra).

1840. *Plotosus lineatus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 412 (type locality : Red Sea; Seychelles, ; Malabar; Maur itius; Tranquemale; Pondicherry; Amboina, Celebes; Friendly Is., Tahiti; Macco; Philippines).

1840. *Plotosus castaneus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 421 (type locality : Mahe).

1851. *Plotosus castaneoides* Bleeker, *Nat. Tijds. Ned. Ind.* **2**, p. 490 (type locality : Rio).

1862. *Plotosus arab* Bleeker, *Atl. Ichth.*, **2**, p. 98 fig. 2.

1864. *Plotosus anguillaris* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 24 (eastern coasts of Africa to Japan and polynesia).

1877. *Plotosus arab* Day, *Fish. India*, p. 483, pl. 112, fig. 4.

1889. *Plotosus arab* Day, *Fauna Brit. India, Fish*, **1**, p. 113.

1913. *Plotosus anguillaris* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 229.

1913. *Plotosus arab* Zugmayer, *Abh. Bayer Akad. Wiss. Math-Phys,. Kl.*, **26**. p. 9 (Mekran).

1929. *Plotosus arab* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 353 (Trivandrum).

1929. *Plotosus anguillaris* Mc Culloch, *Mem. Austral Mus., Sydney* **5**, p. 54 (N. Australia, Queensland).

1930. *Plotosus anguillaris* Schmidt, *Bull. Acad. U.S.S.R.* p. 104 (Nagasaki).

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*Jayaram (1970, *J. zool. Soc. India*, 21 (1), p. 129) has shown that the correct specific name is *P. lineatus* Thunberg

1931 *Plotosus anguillaris* Chu, *Biol. Bull. St. John's Univ.* No. 1, p. 74 (Macao; Amoy; Hongkong; Seas of China and Japan).

1934. *Plotosus anguillaris* Fowler, *Proc. Acad. Nat. Sci. Philad.*, **86**, p. 417 (Natal).

1936. *Plotosus anguillaris* Suvatti, *Index Fish. Siam.*, p. 66.

1936. *Plotosus anguillaris* Hora & Mukerji, *Rec. Indian. Mus.*, **38**, p. 20 (Maungmagan, Lower Burma).

1937. *Plotosus anguillaris* Herre & Myers, *Bull. Raffles Mus.*, Singapore, No. 13, p. 16 (Singapore).

1938. *Plotosus anguillaris* Fowler, *List Fish. Malaya*, p. 45 (Malaya).

1941. *Plotosus anguillaris* Fowler, *Bull. U.S. nat. Mus.*, (100) **13**, p. 747.

1941. *Plotosus anguillaris* Herre, *Mem. Indian Mus.*, **13**, p. 340.

1945. *Plotosus lineatus* Smith, *Bull. U.S. nat. Mus.*, **188**, p. 353 (Gulf of Siam).

1953. *Plotosus anguillaris* Herre, *Check List Philippine Fish.*, p. 133 (Philippines).

1955. *Plotosus arab* Anonymous, *Mar. Fish. Karachi, Sind and Makran*, p. 20.

1955. *Plotosus anguillaris* Munro, *Mar. Freshwater Fish. Ceylon*, p. 51, (marine Ceylon).

Vernacular names.—INDIA : *Schinghala*, Kanarese; *Kalan*, Maharashtra; *Mushu*, *Choongam*, *Moorghee*, Malayalam ; *Kanja Kalutti*, Tamil; Standardised name: *Gang-magur*. SRI LANKA: *Mudhua hung*, Singhalese; *Irung Keleru*, *Kodal Schunguan*, Tamil.

B.11; 1D.1/4-5; 2D+C+A 169—190; P. 1/11; V. 12; Vert. 12/35.

Body elongate, subcylindrical, tail tapering. Head depressed, covered with thin skin, width equalling its length behind angle of mouth, 5-5·5; depth 6·0-8·0 in total length (4·3-4·8 and 5·2-in the standard length. Snout depressed, 3·0. in head. Eyes in the middle of head, with free circular margins, lateral, 8·0 in head, 3·0 in snout, 2·0 in interorbital; interorbital equalling 1/3 of the length head. Nostrils remote from each other, the anterior pair tubular, in the front edge of snout, the posterior with a nasal barbel. Mouth tranverse, upper jaw longer, lips thick, papillated. Maxillary barbels, half to 2/3 as long as head, the outer and inner mandibular barbels much shorter, the nasal barbels reaching hind border of eye. Teeth conical in upper jaw in a band; in the lower jaw mixed with molariform teeth in a band in 2-3 rows; vomerine teeth molariform in crescentic band. First dorsal short, 1·4 in head, with a strong spine, 2·2 in head, serrated on both edges; origin 1·5 eye diameter behind pectoral base, nearer to pectoral base than second dorsal origin; second dorsal long, uniformly low confluent with caudal and anal; origin 1·5 eye diameters before pelvic origin and 1·5 diameters behind last ray of first dorsal; base 1·7 in total length. Pectorals low, horizontal not reaching pelvics, 1·6 in head with a strong spine 2·2 in head, serrated on both edges. Pelvics reaching or not reaching anal 2·8 in head; origin 1·5 eye diameter behind second dorsal origin nearer to anal origin than to pectoral base. Anal long uniformly low, confluent with caudal; origin 6·0 eye diameter behind second dorsal origin and 2·5 eye diameters behind pelvic origin; base 2·2 in total length. A dendritic post anal apparatus between anal and vent.Caudal bluntly pointed or rounded confluent with anal and dorsal, 2·0 in head, 8·6—9·6 in total length. Lateral line. Gill rakers 25.

Chestnut brown becoming lighter below; two bluish white longtitudinal bands, superior from above eye along dorsal base to caudal, the inferior from maxilla along middle of body to caudal; vertical fins edged black.

It attains 300 mm. in length; littoral, marine, ascending estuaries and tidal rivers also.

Distribution.—India : Kerala, Maharashtra, Gujarat, Madras. Pakistan: Makaran. Burma. Sri Lanka—Red-Sea, Seychelles, Mauritius, Natal, Malaya, Singapore, Sumatra, Thailand, Amoy, Hong Kong, Nagasaki, Philippines, Tahiti, Australia; in the latitudinal and longitudinal range of 5°25′—25°7′ N., 62°20′—97°50′ E. in the Indian region and 32°47′ N.—26°S., 30°30′ E.—149°W., beyond Indian region.

347. **Plotosus canius** Hamilton

(Text-fig. 26)

1822. *Plotosus canius* Hamilton, *Fish. Ganges*, pp. 142, 374, pl. 26, fig. 45 (type locality : rivers of Southern Bengal).

1840. *Plotosus unicolor* (Kuhl & van Hass.) Valenciennes, *Hist. nat. Poiss.*, **15**, p. 426 (type locality : Java).

1840. *Plotosus limbatus* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 422 (type locality : Hindustan).

1846. *Plotosus viviparus* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, **3**, pt. 2, p. 182 (type locality : Java).

1846. *Plotosus multiradiatus* Bleeker, *Nat. Gen. Arch. Ned. Ind.* 3, pt. 2, p. 183 (type locality : Java).

1864. *Plotosus canius* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 25 (Ganges, Calcutta, Penang).

1877. *Plotosus canius* Day, *Fish. India*, p. 482, pl. 112, fig. 3.

1889. *Plotosus canius* Day, *Fauna Brit. India*, Fish., **1**, p. 113, fig. 47.

1913. *Plotosus canius* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 227 (Java; Madura; Singapore; Penang; Banka; Sumatra; Borneo; Celebes; Aru Is; British North Guinea).

1936. *Plotosus canius* Suvatti, *Index Fish.*, *Siam*, p. 67 (Siam).

1938. *Plotosus canius* Fowler, *List Fish. Malaya*, p. 45.

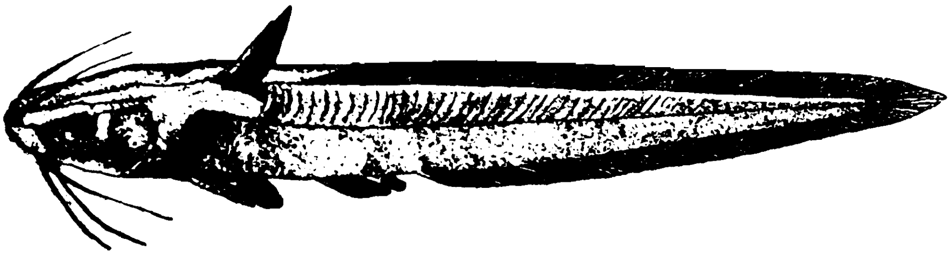
1941. *Plotosus canius* Herre, *Mem. Indian Mus.*, 13, p. 340 (Andamans).

1941. *Plotosus canius* Fowler, *Bull. U.S. nat. Mus.*, (100) **131**, p. 745.

1945. *Plotosus canius* Smith, *U. S. nat. Mus. Bull.*, **188**, p. 354 (Siam).

1953. *Plotosus canius* Herre, *Check List Philippine Fish.*, p. 134.

1955. *Plotosus canius* Munro, *Mar. Freshwater Fish*, Ceylon, p. 51 (marine entering rivers and brackish water).



TEXT-FIG. 26.—*Plotosus canius* Ham. (After F. Day)

Vernacular names.—INDIA : *Kan magur*, Bengal, *Walshingti*, *Walshingala*, Kanarese; *Narshingala*, Maharashtra; *Vari-choongum*, *Mushu*, Malayalam; *Kamda*, *Oriya; Irung-kellettee*, *Irung Ketathi*, Tamil; Standardised name : *Kanmagur*. SRI LANKA : *Kalapu magura*, *Kana magura*, Singhalese; *Keduthal*, Tamil.

B.11-13; 1D 1/5; 2D+C+A. 242-271; P. 1/10-11; V.12; Vert. 15/65.

Body elongate, subcylindrical, tail tapering. Head depressed covered with thin skin, width equal its length behind angle of mouth, 4·5·5·5; depth 7·0-8·2 in the total length (4·0-5·0 and 6·4-7·6 in the standard length). Snout depressed bluntly rounded, 3·1 in head. Eyes in the anterior half of head, lateral, with free circular margins 8-11 in head, 2·5-3·0 in snout, 2·5 in interorbital; interorbital 2·5-2·7 in the length of head. Nostrils remote from each other, anterior pair tubular, in the front edge of snout, the posterior with a nasal barbel. Mouth transverse, upper jaw longer; lips thick, papillated. Maxillary barbels reaching base of pectoral, the outer mandibular barbels to end of opercle, the inner mandibular barbels slightly shorter than the outer, the nasal barbels reaching 3 eye diameters behind hind border of eye. Teeth conical in upper jaw in a narrow band; in the lower jaw mixed with molariform teeth in a semicrescentic band in 4-5 rows; vomerine teeth molariform in crescentic band. First dorsal short, 1·8 in head with a strong spine, 2·2-2·5 in head, serrated on both edges; origin 2 diameters behind pectoral base, nearer to pectoral base than to second dorsal origin; second dorsal long, uniformly low confluent with caudal and anal;origin opposite pelvic origin 2 eye diameters behind last dorsal ray; base 1·7 in total length. Pectorals low, horizontal, not reaching pelvics, 1·6 in head with a strong spine, 2·1 in head, serrated on both edges. Pelvics not reaching anal, 2·2 in head; origin opposite 2nd dorsal origin nearer to anal origin than to pectoral base. Anal long uniformly low; confluent with caudal; origin 4 eye diameters behind 2nd dorsal and pelvic origins between anal and vent. Caudal pointed united with dorsal and anal, 2·3 in head , 9·2-11·5 in total length. Lateral line. Gill rakers 20.

Skin smooth. Brown; dorsals, caudal and anal edged with black.

It attains 915 mm. in length; marine entering tidal waters.

Distribution.—India: Kerala, Maharashtra, W. Bengal, Andamans, Bangladesh and Pakistan, Burma, Sri Lanka.—Penang, Thailand, Indonesia, British North Guinea; in the latitudinal and longitudinal range of 5° 25′—24° 51′ N.

67°4-96° 13′ E. in the Indian region and 11° 30′ N. 6° 12′ S., 100° 14′—142° E. beyond Indian region.

LVI. Family SCHILBEIDAE

Body elongate, compressed, thorax and abdomen keeled or not keeled. Head conical or blunt covered with soft skin or partially granulated. Snout pointed or broadly rounded. Eyes large or moderate with narrow or broad adipose lids or with free orbital margins. Nostril close together or wide apart, with or without nasal barbel, 2, 3 or 4 pairs of barbels. Mouth subterminal, horizontal, oblique, terminal, inferior, upper or lower jaw longer. Teeth villiform in band in jaws; vomerine teeth in 2 small patches or vomero-palatine in 2, 3 or 4 separate patches or in one continuous band or patch. Median longitudinal groove present or absent. Occipital process reaching or not reaching basal bone of dorsal. Gill openings wide; gill membrane free from isthmus. A short rayed dorsal with slender or strong spine present or absent; a small adipose dorsal present or absent. Pectorals with a strong or slender spine. Pelvics with 6-7 rays present or absent. Anal moderate or very long. Caudal deeply forked. Lateral line. Skin smooth. Air bladder well developed, moderate or greatly reduced, thin walled or thick walled, tubular or non-tubular. Branchiostegals 5-12.

The family SCHILBEIDAE is represented by nine genera in the Indian region.

Key to genera of family SCHILBEIDAE

1. Dorsal present ; anal moderate, 24-54 rays	5
2. Dorsal absent ; anal long, 59-90 rays ..	3
3. Pelvics present	**Ailia**
4. Pelvics absent	**Ailiichthys**
5. Barbels 8	7
6. Barbels 2-4	15

7.	Cleft of mouth oblique, extending to front edge or middle or beyond hind edge of eye	**Eutropiichthys**
8.	Cleft of mouth not oblique not extending to front edge of eye	9
9.	Air bladder well developed, large; vomero-palatine teeth in 2 or 3 separate patches or sometimes connected by linear series	11
10.	Air bladder, moderate or greatly reduced; vomero-palatine teeth in 4 distinct patches or in 2 extensive patches separated in the middle or in one continuous patch	13
11.	Vomero-palatine teeth in 2 separate patches sometimes connected by linear series; air bladder thin walled	Pseudeutropius
12.	Vomero-palatine teeth in 3 separate patches, air bladder thick walled	**Neotropius**
13.	Vomero-palatine teeth in 4 distinct patches or in 2 extensive patches separated in the middle, but not in one continuous patch; air bladder, moderate size	**Proeutropiichthys**
14.	Vomero-palatine teeth in 4 distinct patches or in 2 extensive separate patches or in one continuous patch; air bladder greatly reduced	**Clupisoma**
15.	Anal rays 31-34 air bladder moderate or large; teeth villiform in jaws ..	**Pangasius**
16.	Anal rays 40-53; air bladder greatly reduced	**Silonia**

144. Genus **Ailia** Gray

1831. *Acanthonotus* (*nec* Bloch, 1799), Gray, *Ill. Indian Zool.*, **1**, p. 85 (type, *A. cuvieri* Gray); inadmissible.

1831. *Ailia* Gray, *Ill. Indian Zool.*, **1**, p. 85 (type, *Ailia bengalensis* Gray).

Body elongate, strongly compressed. Head covered with skin. Snout conical. Eyes with adipose lids behind angle of mouth. Nostrils close together, anterior in front of snout, the posterior behind the nasal barbel. 4 pairs of barbels. Mouth inferior, cleft extending to mid-orbit, the upper jaw the longer. Teeth villiform in band in jaws; 2 minute patches on vomer. Rayed dorsal absent. A small adipose dorsal, above last sixth of anal. Pectorals with a slender spine finely serrated internally. Pelvics small with 6 rays. Anal very long. Caudal deeply forked. Lateral line. Skin smooth. Air bladder tubular, horse-shoe-shaped, greatly reduced. Branchiostegals 8.

Distribution.—India, Pakistan, Bangladesh, Nepal.

The genus **Ailia** is represented by a single species in the Indian region.

348. Ailia Coila (Hamilton)

(Text-fig. 27)

1822. *Malapterurus coila* Hamilton, *Fish. Ganges*, pp. 158, 375 (type locality : fresh water rivers of Bengal, Ganges).

1831. *Silurus (Acanthonotus) cuvieri* Gray & Hardwicke, *Ill. Ind. Zool.* **1**, p. 85.

1831. *Malapterurus (Ailia) bengalensis* Gray & Hardwicke, *Ill. Ind. Zool.*, **1**, p. 85.

1831. *Ailia bengalensis* Gray, *Zool, Misc.*, p. 8.

1839. *Malapterurus cuvieri* Swainson, *Nat. Hist. Animal.* **2**, p. 307.

1864. *Ailia bengalensis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 56 (Ganges, Calcutta).

1864. *Ailia affinis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 56 (type locality : Himalayas, Assam).

1877. *Ailia coila* Day, *Fish. India*, p. 488, pl. 114, fig. 4 (from the Kistna and Orissa throughout the Indus, Jumna and Ganges after they leave the hills to their termination; Assam).

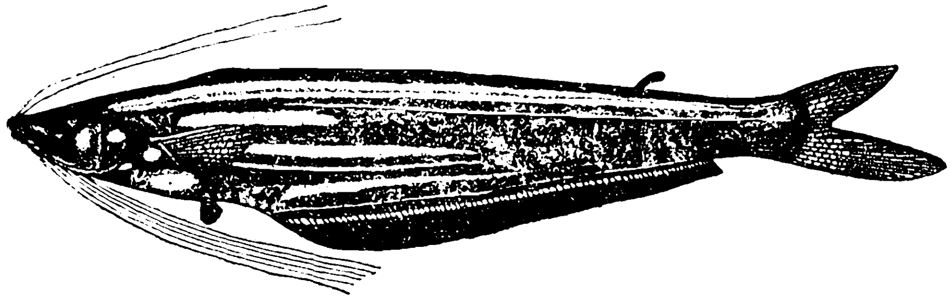
1889. *Ailia coila* Day, *Fauna Brit. India.*, Fish., **1**, p. 134, fig-58.

1937. *Ailia coila* Hora, *Rec. Indian Mus.*, **39**, p. 44 (Tribeni, Nepal).

1938 *Ailia coila* Nair, *Rec. Indian Mus.*, **40**, pp. 183, 186.

1941 *Ailia coila* Hora, *Rec. Indian Mus.*, **43**, p. 111, text-fig. 5.

1956. *Ailia coila* Karamchandani & Motwani, *J. zool. Soc. India*, p. 23 (Ganga R. near Dighwaha and Samaria Ghat, Bihar).



TEXT-FIG. 27.—*Ailia coila* (Ham.) (After F. Day)

Vernacular names. —INDIA. *Kajuli vacha,* Bengal; *Batansi,* Bhagalpur; *Basanguti,* Gorakhpur; *Puttuli, Buns putta, Vella Kalada,* Telegu; *Banspati,* U.P.; Standardised name: *Banspati.* BANGLADESH: *Kajuli, vacha.* PAKISTAN: *Mun-glee-ah-nee,* Sind.

B.8; D.0; P. 1/14; V.6; A.59-75; C. 19.

Body elongate, strongly compressed. Head covered with skin, width equal to its length minus snout, 6·0-7·0; depth 5·2-6·5 (5·0-6·0 and 4·5-5·6 in standard length). Snout pointed, 3·1 in head. Eyes with adipose lids, 3·0-5·0 in head, 1·2-1·3 in snout, 1·0 in interorbital, behind angle of mouth and in level with it. Mouth inferior; gape equal to 1/3 of the length of head, upper jaw longer, cleft extending to half to orbit. Maxillary, outer and inner mandibular and nasal barbels extending to 1/3 or middle of the standard length. Teeth villiform in jaws; 2 minute patches on vomer. Dorsal absent; a small adipose dorsal above, the last sixth of anal; base about 1/2 eye diameter. Pectorals equal to head, in a level with eye with a slender spine finely serrated internally, extending beyond pelvics, nearly to anal origin. Pelvics short, small, 4·0 in head, not reaching anal, origin midway between anal origin and pectoral base. Anal long; origin 1·5 eye diameter behind pelvics, 4·5 eye diameters behind pectoral base; base 1·7 in standard length. Caudal deeply forked, 1·2 in head, 7·2-8·4 in total length, lower lobe the longer; least height of caudal 1·5 times its length. Lateral line.

Skin smooth. Silvery; some of the fins tipped grey.

It attains 305 mm. in length; freshwater, tidal rivers.

Distribution.—India: the Krishna, Andhra, Orissa, U.P., Bihar, W. Bengal, Assam; Pakistan ; Bangladesh; Nepal.

145. Genus **Ailiichthys** Day

1871. *Ailiichthys* Day, *Proc. zool. Soc. Lond.*, p. 712 (type *A. punctata* Day, orthotypic).

Body elongate, strongly, compressed. Head covered with skin, upper profile concave. Snout pointed,. Eyes with adipose lids, behind .angle of mouth. Nostrils close together, anterior in front, the posterior behind the nasal barbel. Mouth inferior, cleft extending to mid-orbit, the upper jaw the longer. 4 pairs of barbels. Teeth villiform in band in jaws; vomerine in 2 small patches. No rayed dorsal; a very small adipose dorsal above last fourth of anal. Pectorals with a slender spine not serrated internally. Pelvics absent. Anal very long caudal deeply forked. Lateral line. Skin smooth. Air bladder tubular, horse-shoe shaped, greatly reduced. Branchiostegals 8.

Distribution. —India, Pakistan.

The genus is represented by a single species in the Indian region.

349. **Ailiichthys punctata** Day

1871. *Ailiichthys punctata* Day, *Proc. zool. Soc. Lond.*, p. 713 (type locality : Jumna below Delhi).

1877. *Ailiichthys punctata* Day, *Fish. India*, p. 489, pl. 114, fig. 2 (Jumna below Delhi; Indus in Sind).

1889. *Ailiichthys punctata* Day, *Fauna Brit. India*, Fish., **1**, p. 135, fig. 59.

1941. *Ailiichthys punctata* Hora, *Rec. Indian Mus.*, **43**, p. 112.

1956. *Ailiichthys punctata* Karamchandani & Motwani, *J. zool. Soc. India*, **8**, p. 26, fig. 4.

Vernacular names.—INDIA: *Puttassi, Puttuah,* Punjab. PAKISTAN: *Puttassi, Puttah.*

D.-/0; P. 1/12; A. 76-90; C.17.

Body elongate, strongly, compressed. Head covered with skin, width equal to postorbital part of head (upper profile concave), 6·0-7·0; depth 5·5-6·0 in total length (5·5-6·5 and 4·5-5·0 in standard length). Snout pointed, 4·0 in head. Eyes behind angle of mouth and on level with it, 2·7-3·0 in head, 0·5-0·6 in snout, 1·0 in interorbital. Mouth inferior, gape equal to 1/3 of the length of head; cleft extending to half way to orbit, upper jaw longer. Maxillary, outer and inner mandibulars and nasal barbels extending an eye diameter beyond anal. Teeth villiform in jaws, vomerine in 2 small patches. Dorsal absent; a small adipose dorsal above the last fourth of anal, with a narrow base less then 1/2 eye diameter. Pectorals 1·2 times head, reaching an eye diameter beyond anal origin, with a slender spine not serrated internally. Pelvics absent. Anal long; origin 2 eye diameters behind pectorals base, base 1·7 in standrad length. Caudal deeply forked, lower the longer, 1·2 times head, 5·0-6·0 in total length; least height of caudal peduncle 2·0 times in its length. Lateral line.

Skin smooth. Silvery, upper surface of head blackish; a large black spot at caudal base.

It attains 102 mm. in length; freshwater.

Distribution.—India : the Yamuna below Delhi. Pakistan; the Indus in Sind.

146. Genus **Clupisoma** Swainson

1839. *Clupisoma Swainson, Nat. Hist. Animal.*, **2**, p. 306 (type, ***C.*** *argentata Swns*=*Silurus garua* Ham., logotypic).

1858. *Schilbeichthys* Bleeker, *Ichth. Archipel. Ind. Prod.*, **1**, Siluri, p. 255 (type *Silurus garua* Ham., orthotypic).

Body elongate, compressed, thorax and abdomen keeled upto vent or abdomen keeled between pelvics and vent or thorax and abdomen non-keeled. Head covered with soft skin. Snout broadly or bluntly pointed. Eyes large, ventro-lateral with adipose lids. Nostrils close together, the posterior much longer than the anterior, the posterior with a nasal barbel. 4 pairs of barbels. Mouth subterminal or inferior, upper jaw longer. Teeth villiform in band in jaws; vomero-palatine in 4 or 2 separate patches or in a single continuous band. Median longitudinal groove on head; occipital process reaching or not reaching basal bone or dorsal. Gill openings wide; gill membrane free from isthmus. Rayed dorsal with a slender spine, serrated internally, rugose externally. A small adipose dorsal present or absent. Pectorals with a strong spine roughened or smooth externally denticulated internally. Pelvics with 6 rays. Anal long. Caudal deeply forked. Lateral line. Skin smooth. Air bladder greatly reduced, not tubular, thick walled, flattened. Branchiostegals 6.

Distribution.—India, Pakistan, Bangladesh, Nepal, Burma.

The genus **Clupisoma** is represented by three species in the Indian region.

Key to species of genus **Clupisoma** Swainson

1. Abdominal edge keeled throughout or between pelvics and vent; pectorals reaching or not reaching pelvic origin; maxillary barbels extending beyond pectoral bases	3
2. Abdominal edge rounded, non-keeled; pectoral reaching pelvics; maxillary barbels not extending beyond bases of pectorals.	*C. montana*
3. Abdominal edge keeled throughout ; pectoral reaching pelvic origin	*C. prateri*
4. Abdominal edge keeled between pelvics and vent; pectoral not reaching pelvic origin	*C. garua*

350. **Clupisoma garua** (Hamilton)

(Text-fig. 28)

1822. *Silurus garua* Hamilton, *Fish. Ganges*, pp. 156, 375, pl. 21, fig.50 (type locality : freshwater rivers of the Gangetic provinces).

1839. *Clupisoma argentata* Swainson, *Nat. Hist. Animal.*, **2**, p. 306.

1839. *Schilbe garua* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 379, pl. 413.

1853. *Schilbe garua* Bleeker, *Verh. Bat. Gen.*, **25**, pp. 54, 110.

1858. *Schilbe garua* Blyth, *Proc. As. Soc. Bengal*, p. 283.

1858. *Schilbeichthys garua* Bleeker, *Ichth. Archipel. Ind. Prod.*, **1,** Siluri, p. 256.

1862. *Cupisoma garua* Bleeker, *Versl. Akad. Amsterdam,* **14,** p. 393.

1863. *Clupisoma garua* Bleeker, *Ned. Tijds. Dierk.*, **1,** p. 114.

1864. *Schilbeichthys garua* Günther, *Cat. Fish. Brit. Mus.*, **5,** p. 57 (Ganges; Bengal).

1877. *Pseudeutropius garua* Day (*partim*), *Fish. India,* p. 474, pl. 109, fig. 6 [(throughout the large rivers of Sind, India, Assam). (the specimen figured, 7 inches, was from Calcutta)].

1889: *Pseudeutropius garua* Day (*partim*), *Fauna Brit. India,* Fish., **1,** p. 141.

1894. *Schilbe'chthys garua* Bridge & Haddon, *Phil. Trans. roy. Soc. London.*, (B) **184,** pp. 211-313 (air bladder and Weberian ossicles).

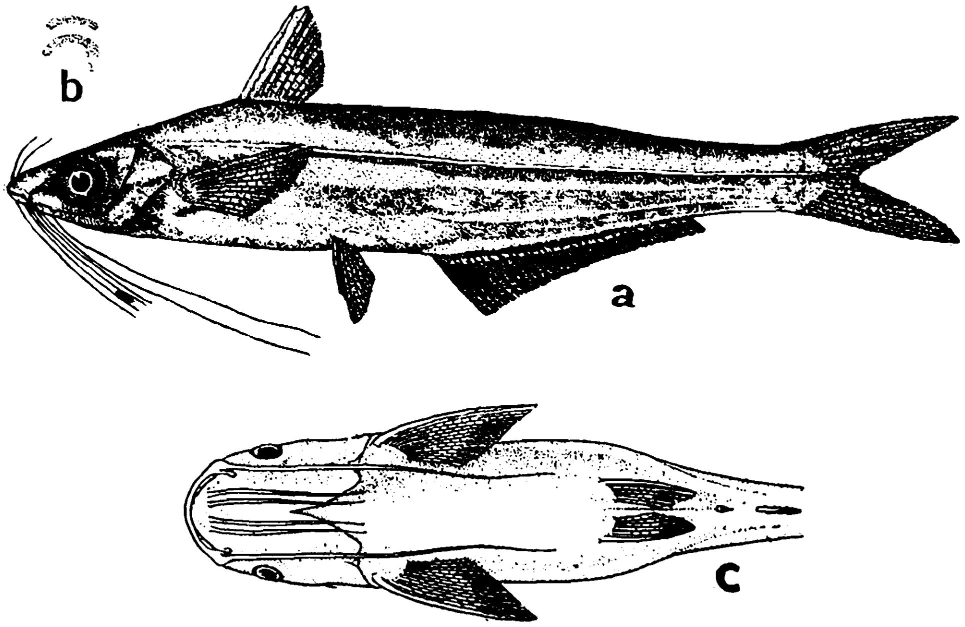
1913 *Pseudeutropius garua* Chaudhuri, *Rec. Indian Mus.*, **8,** p. 255 (Dibrugarh).

1937. *Clupisoma garua* Hora, *Rec. Indian Mus.*, **39,** p. 44 (Tribeni, Nepal, Terai).

1937. *Clupisoma garua* Hora, *Proc. nat. Inst. Sci. India,* **3,** p. 39 (disposition of liver and kidney).

1937. *Clupisoma garua* Hora, *J. Bombay nat. Hist. Soc.*, **39,** p. 666 (M.P.; Saraghat; Saran, Bihar; Shantipur, Bengal; Orissa; Assam).

1949. *Clupisoma garua* Hora, *J. zool. Soc. India,* **1,** p. 2 (Rihand river at Pipri).



TEXT-FIG. 28.—*Clupisoma garua* (Ham.) (*a*) Lateral view (*b*) Dentition (After F. Day) (*c*) Ventral view of head and anterior part of body (After S. L. Hora)

Vernacular names.—INDIA : *Puttosi,* Bengali; *Garua, Gharuya, Gaurchcha,* Calcutta; *Bachua,* Hindi; *Punia Cathua, Punia bachua,* Oriya; *Bikree,* Oudh; *Chel-lee, Ka-raad,* Punjab; Standardised name : *Garua.* BANGLADESH : *Puttossi; Garua.* PAKISTAN : *Chel-lee, Ka-raad, Dhon-gu-nu.*

B.6; D.1/7; P.1/11; V.6; A. 29-30 (3/26-33).

Body elongate, compressed, abdomen keeled between pelvics and vent. Head covered with soft skin, oval blunt, wider than body, 4 ·8-5 ·6; depth 4 ·6-5 ·6 in standard length. Snout 2 ·3-3 ·5 in head. Eyes large with adipose lid ventrolateral in the middle of head, above angle of mouth 3 ·0-5 ·8 in head, 1 ·2-1 ·6 in snout, 1 ·1-1 ·8 in inter-orbital. Mouth subterminal, crescentic, 1 ·8 in width of head, upper jaw slightly longer. Maxillary barbels reaching slightly beyond pectoral ends ; outer and inner mandibular barbels to pectoral base, nasal barbels just reaching anterior margin of eye. Teeth small villiform in band in jaws; vomero-palatine continuous in a horse-shoe shaped band or in two separate patches. Median longitudinal groove on head extending to hind border of eye. Occipital process long pointed, 4 ·0 times as long as wide at its base, extending to basal or not extending to basal bone of dorsal. Dorsal equal to head, with a slender spine, rugose externally feebly serrated internally, 1 ·1-1 ·5 in head; origin 1 ·5 in diameters behind head; adipose dorsal absent in adult (but present as a minute structure in young upto 100 mm.). Pectorals not reaching pelvics, 1 ·1 in head with a spine, 1 ·2-1 ·4 in head roughened externally; denticulated internally. Pelvics not reaching anal, 1 ·8 in head; origin an eye diameter behind last dorsal ray, nearer to anal origin than pectoral base. Anal long, base 3 ·5 in standard length; origin 2 ·4 eye diameters behind pelvic origin. Caudal deeply forked, equal to or 1 ·1 times head, lower lobe the longer,4 ·3-5 ·1 in total length; least height of caudal peduncle 2 ·0 in its length. Lateral line.

Skin smooth. Greenish grey above silvery below; fins diaphanous.

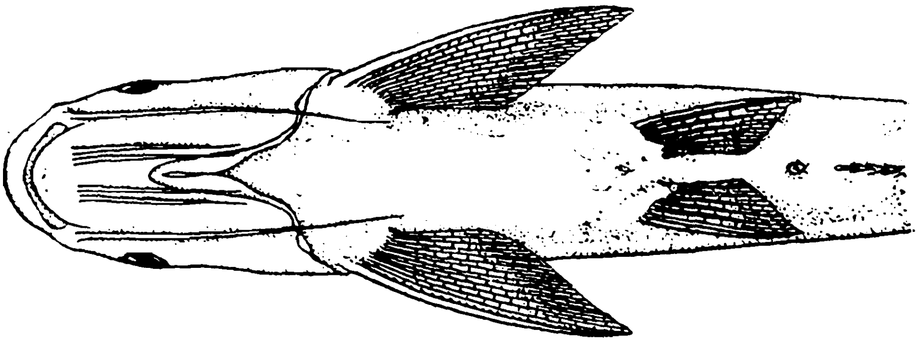
It attains 610 mm. in length; fresh and tidal waters.

Distribution.—Throughout the large rivers of India, Pakistan, Bangladesh and Nepal.

351. **Clupisoma montana** Hora

(Text-fig. 29)

1937. *Clupisoma montana* Hora, *J. Bombay nat. Hist. Soc.*, **39**, p. 673, text-figs. 7,8 (type locality : Teesta R. below Darjeeling; type in the Zoological Survey of India).



TEXT-FIG. 29.—Ventral view of head and anterior part of body of *Clupisoma montana* Hora (After S. L. Hora)

Vernacular name.—INDIA : *Kocha*, Darjeeling.

B.6; D.1/6-7/-; P.1/12; V. 6; A. 41-43 (3/38—40), C. 17;

Body elongate, compressed, abdomen and thorax rounded, non-keeled. Head short bluntly pointed width of head, 1·5-1·6 in its length, covered with soft skin, 5·0 in depth, 4·5-4·8 in standard length. Snout bluntly pointed, 2·4-3·1 in head. Eyes large, ventro-lateral, with adipose lids, in the middle of head above angle of mouth, 4·7-4·8 in head, 1·8 in snout, 2·0 in convex interorbital. Mouth inferior, crescentic, 2·0 in width of head, upper jaw the longer; lip thin, adhering close to jaw except at angles forming free lobe; lower jaw sharp broadly pointed. Maxillary barbels extending beyond pectoral base, outer and inner mandibular barbels shorter than head, nasal barbels beyond anterior margin of eye. Teeth small villiform in band in jaws, vomero-palatine band continuous or interrupted in the middle. Median longitudinal groove on head extending over occipital process. Occipital process long, narrow, reaching basal bone of dorsal. Dorsal 1·0-1·2 in head with a slender spine smooth externally, serrated internally, origin 2·0 eye diameters behind head; adipose dorsal above last fourth of anal base, 2·0 eye diameters before last anal ray. Pectorals 1·0-1·1 in head, reaching pelvic origin with a spine, smooth externally, finely serrated internally. Pelvics 1·8-1·9 in head not reaching anal origin; origin half an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal long, its base 3·0 in standard length, origin 3·0 eye diameters behind pelvic origin. Caudal deeply forked lobes subequal, 1·1 times head, 4·5 in total lenght; least height of caudal peduncle 1·8-1·9 its length. Lateral line.

Skin smooth. Silvery grey above becoming lighter below.

It attains 290 mm. in length; freshwater.

Distribution. —India: Tista R., below Darjeeling.

352. **Clupisoma prateri** Hora

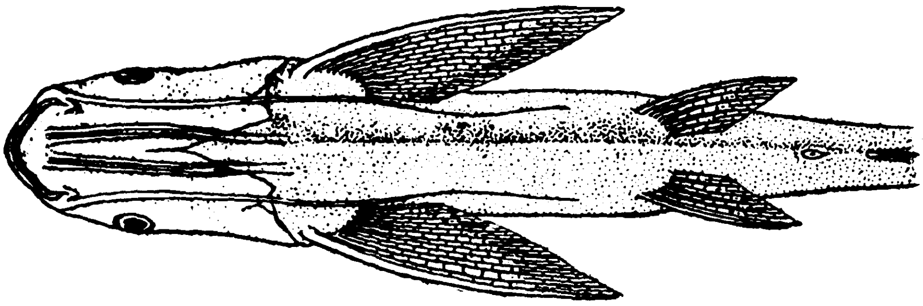
(Text-fig. 30)

1877. *Pseudeutropius garua* Day (*partim*), *Fish. India*, p. 474.

1889. *Pseudeutropius garua* Day (*partim*), *Fauna Brit. India*, Fish., 1, p. 141.

1890. *Pseudeutropius garúa* Vinciguerra, *Pesci di Birmania*, p. 81 (Mandalay).

1937. *Clupisoma prateri* Hora, *J. Bombay nat. Hist. Soc.*, 39, p. 671 text-figs. 3b, 6(type locality : Mandalay; Bassein, Burma; type in the Zoological Survey of India).



TEXT-FIG. 30.—Ventral view of head and anterior part of body of *Clupisoma prateri* Hora (After S. L. Hora)

B.6; D.1/9; P. 1/12; V. 6; A. 40-44; C. 17.

Body elongate, compressed, abdominal edge keeled from thorax to vent. Head width 1 ·5-1 ·6 in its length, 5 ·1-6 ·0; depth 4 ·7-5 ·8 in standard length. Snout broadly pointed, 2 ·5-2 ·8 in head. Eyes large with adipose lids, 3 ·1-3 ·5 in head, 1 ·1-1 ·3 in snout, 1 ·2-1 ·4 in interorbital. Mouth subterminal, crescentic, 2 ·0 in width of head, upper jaw slightly longer. Maxillary barbels extending nearly to pelvic origin or to middle of pelvics or anal origin,outer and inner mandibular barbels to pectoral base, the nasal barbels to midorbit. Teeth small villiform in band in jaws; vomero-palatine in 4 or 2 separate patches. Dorsal 1 ·1 in head with a spine finely serrated internally, 1 ·2 in head; origin about 2 eye diameters behind head; adipose dorsal absent in adult (present in juvenile). Pectorals 1 ·3-1 ·4 times head reaching pelvic base or little beyond with a spine serrated internally, 1 ·1-1 ·3 times head. Pelvic not reaching anal, 1 ·4 in head; origin before pectoral ends and 2 eye diameters behind last dorsal ray. Anal long 40-44 rays; caudal forked. Lateral line.

Skin smooth. Silvery grey lighter below.

It attains 270 mm. in length; freshwater.

Distribution.—Burma : Mandalay, Bassein.

147. Genus **Eutropiichthys** Bleeker

1862. *Eutropiichthys* Bleeker, *Versl. Akad. Amsterdam*, **14**, p. 398 (type *E. vacha* Ham.)

Body elongate, compressed. Head compressed, covered with skin. Snout conical, compressed. Eyes large, lateral, with broad adipose lids. Nostrils wide apart, 4 pairs of barbels. Cleft of mouth oblique, extending to front margin or first third or hind border of eye. Teeth villiform in broad band in jaws produced backwards; vomero-palatine in pyriform band or crescentic band or in separate patches. Median longitudinal groove on head. Occipital process not reaching basal bone of dorsal. Rayed dorsal with a slender spine finely serrated internally, rugose externally. A small adipose dorsal, pectorals with a strong spine serrated internally, rugose externally. Pelvics with 6-7 rays. Anal long. Caudal deeply forked. Lateral line.

Skin smooth. Air bladder greatly reduced, tubular. Branchiostegals 5-11.

Distribution.—India, Pakistan, Bangladesh, Nepal, Burma; Thailand.

The genus **Eutropiichthys** is represented by three species in the Indian region.

Key to species of genus **Eutropiichthys** Bleeker

1. A continuous vomero-palatine band wider or narrower than or equal to premaxillary band, cleft of mouth extending to hind border or front edge of eye; nasal barbels extending to a short distance behind posterior edge of eye or to hind edge of head	3
2. Vomero-palatine band interrupted in the middle: cleft of mouth extending to below first third of eye; nasal barbels extending to base of dorsal fin	*E. goongwaree*
3. Vomero-palatine band wider than premaxillary band; cleft of snout extending to hind border of eye; nasal barbels extending to hind edge of head	*E. vacha*
4. Vomero-palatine band narrower than premaxillary band; cleft of mouth extending to posterior edge of eye	*E. murius*

353. **Eutropiichthys goongwaree** (Sykes)

1838. *Hypophthalmus goongwaree* Sykes, *Proc. zool. Soc. Lond,* Part 6, p. 163.

1841. *Hypophthalmus goongwaree* Sykes, *Trans. zool. Soc. Lond,* 2, p. 369, tab. 64 fig. 3 (type locality : Mota Mola River, Dekkan).

1849. *Bagrus goongwaree* Jerdon, *Madras J. Litt. Sci.*, **15**, p. 336.

1864. *Pseudeutropius goongwaree* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 61.

1877. *Pseudeutropius goongwaree* Day, *Fish. India*, p. 471, pl. 109, fig. 3 (the specimen figured life-size from Kurnool.).

1889. *Pseudeutropius goongwaree* Day, *Fauna Brit. India*, Fish., **1**, p. 137, fig. 60.

1937. *Eutropiichthys goongwaree* Hora, *J. Bombay nat. Hist. Soc*, **39**, p. 435, fig. 4a.

B.6; D-1/7/0; P. 1/13; V.6; A. 54 (3/51); C. 17.

Body elongate, compressed. Head compressed, covered with soft skin, width more than half its length, 5 ·0; depth 5 ·0 in the total length (4·2 and 4·2 in standard length). Snout 4 ·5 in head. Eyes with a very broad circular adipose lids partially on lower surface of head, 2 ·7 in head, 0 ·7—1 ·0 in snout, 1 ·0 in interorbital. Cleft of mouth extending to below first third of eye, upper jaw longer, width of gape of mouth equalling the diameter of eye. Maxillary barbels extending to pelvic origin, outer and inner mandibular barbels equal to head, the nasal barbels to dorsal origin. Teeth sharp, villiform; in jaws in broad band produced backwards at the sides; a long vomero-palatine band as broad as maxillary band interrupted in the middle. Median longitudinal groove on head extending to base of occipital process. Occipital process narrow at its base. Dorsal 1 ·2 in head with a slender spine, 1 ·4 in head, finely serrated internally; origin behind posterior end of pelvic base, a very small adipose dorsal; origin about 1/3 eye diameter before last anal ray. Pectorals 1 ·1 in head, extending beyond pelvics and opposite to fifth or sixth branched ray of dorsal with a moderately strong spine strongly denticulated internally. Pelvics 2 ·1 in head, reaching anal origin; origin under the middle of pectoral fin and before dorsal origin. Anal long; origin opposite last dorsal ray, base, 2 ·5 in the standard length. Caudal deeply forked lobes pointed, 1 ·2 in head, 6 ·0 in total length; least height of caudal peduncle 1 ·6 in its length. Lateral line.

Skin smooth. Silvery darkest superiorly.

It attains 305 mm. in length; freshwater.

Distribution. —India : Madras, Maharashtra, Andhra.

354. **Eutropiichthys murius** (Hamilton)

(Text-fig. 31)

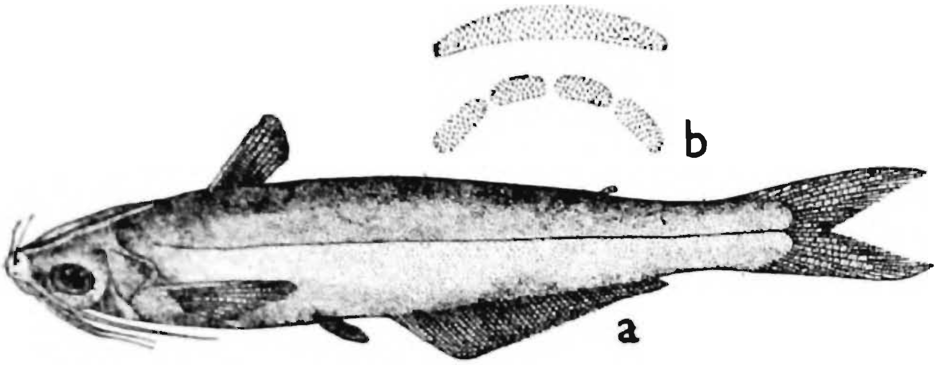
1822. *Pimelodus murius* Hamilton, *Fish. Ganges*, pp. 195, 378 (type locality : Mahananda river).

1864. *Eutropius* (?) *murius* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 54 (Mahananda river: 4 inches long).

1877. *Pseudeutropius murius* Day, *Fish. India*, p. 472, pl. 108, fig. 6.

1889. *Pseudeutropius murius* Day, *Fauna Brit. India*, Fish., **1**, p. 129.

1937. *Eutropiichthys murius* Hora, *J. Bombay nat. Hist. Soc.*, **39**, p. 435, text-fig. 4c ("rivers of Sind, Orissa, the Jumna and rivers of Bengal and Assam").



TEXT-FIG. 31.—*Eutropiichthys murius* (Ham.) (*a*) Lateral view (*b*) Dentition (After F. Day)

B. 5; D. 1-7/O; P.1-10; V.6; A. 38—43 (3/35-40); C.17.

Body elongate, compressed. Head compressed, covered with soft skin, width above 2/3 of its length, 5·5—6·0; depth 5·5—6·4 in the total length, (4·5—5·5 in the standard length). Snout 3·4 in head. Eyes lateral with broad circular adipose lids, 3·0–3·2 in head, 0·7 in snout, 1·0 in interorbital. Cleft of mouth extending to front margin of eye; width of gape of mouth equalling 1/3 of length of head, upper jaw slightly longer. Maxillary barbels extending to nearly middle of pectoral, the outer and inner mandibular barbels a little longer than head, the nasal barbels to a very short distance behind post orbit. Teeth sharp villiform; in jaws in band interrupted at the posterior end at the sides; semilunar vomero-palatine band narrower or equal to the width of the maxillary band. Median longitudinal groove on head extending to end of occipital process. Occipital process short, narrow, half as wide at its base as long with a long interspace between it and the basal bone of dorsal. Dorsal 1·4 in head with a weak spine equal to head minus snout, very finely serrated externally, coarsely serrated internally; origin opposite the middle of pectoral and 2 eye diameters before pelvic origin, one eye diameter behind head; a very small adipose; adipose dorsal origin an eye diameter before anal ray. Pectorals equal to head nearly reaching pelvics with a weak spine nearly equal to head roughened externally, serrated internally. Pelvics 2·8-3·0 in head not reaching anal; origin 1/2 eye diameter behind last dorsal ray, nearer to anal origin than to caudal base. Anal long; origin 1·7 eye diameters behind pelvic origin and 2·0 eye diameters behind last dorsal ray; base 3·0 in standard length. Caudal deeply forked, lobes subequal, pointed, equal to head, 5·5—6·4 in total length; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Silvery above becoming lighter along the sides and below; dorsal, pectorals and caudal tipped blackish.

It attains 203 mm. in length: freshwater.

Distribution.—India : The Yamuna, the rivers of West Bengal, Orissa and Assam. Pakistan : rivers of Sind. Bangladesh.

355. **Eutropiichthys vacha** (Hamilton)

(Text-fig. 32)

1822. *Pimelodus vacha* Hamilton, *Fish. Ganges*, pp. 196, 378, pl. 19, fig. 64 (type locality: larger freshwater rivers of the Gangetic provinces).

1839. *Pachypterus punctatus* Swainson, *Nat. Hist. Animal.*, **2**, p. 306.

1839. *Bagrus vacha* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 392.

1854. *Bagrus vacha* Bleeker, *Verh. Bat. Gen.*, **25**, pp. 56, 112.

1862. *Eutropiichthys vacha* Bleeker, *Versl. Akad. Amsterdam*, **14**, p. 398.

1863. *Eutropiichthys vacha* Bleeker, *Ned. Tijds. Dierk.*, **1,** p. 107.

1864. *Eutropiichthys vacha* Günther, *Cat. Fish. Brit. Mus.*, **5,** p. 38 (Bengal).

1877. *Eutropiichthys burmanicus* Day, *Rep. Freshw. Fish. Fisheries India and Burma*, p. 490 (type locality : Burma).

1877. *Eutropiichthys vacha* Day, *Fish. India,* p. 490, pl. 114, fig. 6 (from the Punjab through the large rivers of Sind, Bengal, Orissa and Burma).

1880. *Pseudeutropius goongwaree* (*nec.* Sykes) Vinciguerra, *Ann. Mus. Civ. Stor nat. Genova,* **18,** p. 91.

1889. *Eutropiichthys vacha* Day, *Fauna Brit. India,* Fish., **1,** p.128, fig. 55.

1890. *Eutropiichthys vacha* Vinciguerra, *Ann. Mus. Civ. Stor. nat. Genova,* (2) **9,** p. 199.

1890. *Eutropiichthys vacha* Vinciguerra, *Pisci di Birmania,* pp. 28, 71 (Mandalay : Bhamo).

1894. *Eutropiichthy vacha* Bridge & Haddon, *Phil. Trans. roy. Soc. London,* (B), **184,** p. 201 (air bladder & skeleton).

1929. *Eutropiichthys vacha* Prashad & Mukerji, *Rec. Indian Mus.*, **31,** p. 175, figs. 2, 3. (Indawgyi Lake; the Indaw R., Nam Ting R.).

1936. *Eutropiichthys vacha* Suvatti, *Index Fish. Siam,* p. 81 (Siam).

1936. *Eutropiichthys vacha* D' Abrue, *Rec. Nagpur Mus.* , **9,** pp. 2, 34 (Mahanaddy R.).

1937. *Eutropiichthys vacha* Hora, *J. Bombay nat. Hist. Soc.*, **39,** p 436, text-figs. 4b, 5.

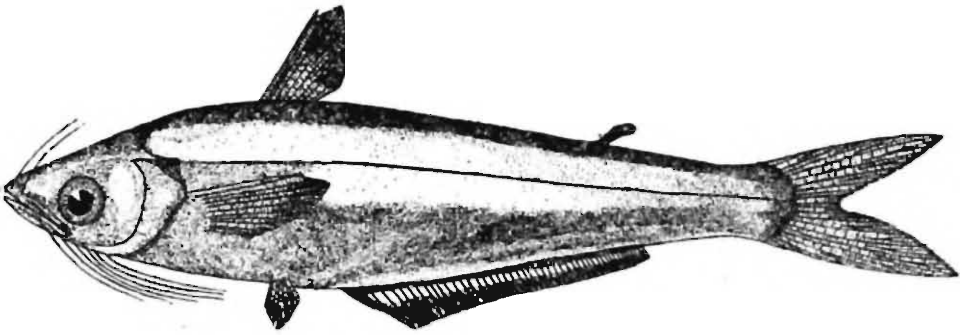
1938. *Eutropiichthys vacha* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3,** pp. 6, 86 (not found locally but frequently brought to Siliguri by rail probably from Bihar).

1938. *Eutropiichthys vacha* Nair, *Rec. Indian Mus.*, **40,** p. 183, text-figs. 1, 2 (air bladder).

1945. *Eutropiichthys vacha* Smith, *U.S. nat. Mus. Bull.*, **188,** p. 356 at Maesort (in the Menam Muey, a tributary of the Salwin).

1950. *Eutropiichthys vacha* Menon, *Rec. Indian Mus.*, **47,** p. 234 (Kosi river about 3 miles from Nepal).

1955. *Eutropiichthys vacha* Job, David & Das, *Indian J. Fish.*, **2**, p. 35 (Mahanadi R.).



TEXT-FIG. 32.—*Eutropiichthys vacha* (Ham.) (After F. Day)

Vernacular names.—INDIA : *Tunti, Kangon*, Assam; *Bacha, Bhacha, Vacha*, Bengal's *Katla; Bachoya, Sugwabachoya*, Bihar; *Bachwa* Hindi; *Butchua, Nandi butchu*, Orissa; *Nee much*, N.W. Sub-Himalaya, Standardised name : *Vacha*. BANGLADESH : *Bacha, Chel-lee*, Sind. BURMA : *Nga-myen—kouban, Katha-boung, Nga-myee ying*.

B. 11; D. 1/7/0; P. 1/13-16; V. 7; A. 3-4/41—52; C.17.

Body elongate, compressed. Head compressed, covered with soft skin, width equalling its length behind the middle of eye, 5·5—5·7; depth 5 1—5·4 in the total length (4·2—5·0 and 4·1—5·0 in standard length). Snout compressed, invariably pointed but in very rare cases slightly rounded, 2·7—3 1 in head. Eyes large, lateral above, the cleft of mouth with broad adipose lids, 3·0—4·5 in head, 1·0—1·5 in snout, 1·0—1 1 in interorbital. Cleft of mouth oblique, extending to hind border of orbit. Upper jaw slightly longer. Maxillary barbels extending to end of preopercle (longer in young specimens); outer and inner mandibular barbels on a transverse line across the chin, shorter, the nasal barbels to hind edge of head. As a rule none of the barbels longer than head but in young specimens and in Burmese examples longer. Teeth sharp and villiform; in jaws in broad band produced backwards at the sides; vomero-palatine band, pyriform, broader than maxillary band, often very close to maxillary band. Single median longitudinal frontanel on head. Occipital process 3·0 times as long as wide at its base. Dorsal 1·4 in head, with a thin weak spine faintly serrated internally; origin slightly in advance of pelvics (in Indian examples) or opposite or slightly behind the origin of pelvics (in Burmese and Siamese examples); a very small adipose dorsal origin about an eye diameter before the last anal ray. Pectorals reaching beyond pelvic origin, 1·2 in head with a spine equal to or slightly longer than dorsal spine, serrated internally, roughened externally. Pelvics not reaching anal, 3·0—3·5 in head; origin opposite or before or behind dorsal origin. Anal long, origin 1·0 or 1·3 eye diameters behind last dorsal ray, base 2·5—2·6 in standard length. Caudal equal to or slightly smaller than head, deeply forked, lobes pointed, 5·5—6·2 in total length; least height of caudal peduncle, 1·8—2·0 in its length. Lateral line.

Skin smooth. Silvery greyish along the back; pectorals and caudal edged black.

It attains 305 mm. in length; fresh and tidal waters.

Distribution.—India : throughout the large rivers of East Punjab, Delhi, U.P., Bihar, W. Bengal, Orissa. Pakistan : large rivers of Sind. Bangladesh. Nepal : Kosi river. Burma : Mandalay, Bhamo, Indawgyi lake, the Indaw R., Nam Ting R.—Thailand; in the latitudinal and longitudinal range of 19° 48′—31° 37′ N., 67° 4′—97° 17′ E. in Indian region and 16°N., 100° E. in Thailand.

148. Genus **Neotropius** Kulkarni

1952. *Neotropius* Kulkarni, *Rec. Indian Mus.*, **49**, p. 231 (type, *N. khavalchor* Kulkarni, orthotypic).

Body elongate, moderately compressed. Head slightly depressed. Eyes large without adipose lids, lateral, behind and above angle of jaw. Nostrils wide apart, tubular, anterior near the antero-lateral margin of head, more or less longitudinally placed, the posterior longitudinally placed wide apart, space between them equalling distance between anterior and posterior nostrils. Mouth inferior upper jaw longer, over hanging, with denticulations from tip of snout to border of mouth. Four pairs of barbels.; a nasal pair, a maxillary pair and 2 mandibular pairs. Teeth villiform in band in jaws; a crescentic vomerine band, 2 widely separated minute palatine patches. Median longitudinal groove on head extending to base of occipital process. Occipital process extending to basal bone of dorsal. Gill openings wide, gill membranes over lapping each other at isthmus and free from isthmus. Rayed dorsal with one short serrated spine and 5—6 branched rays.

nearly between pectoral base and pelvic origin. A small adipose dorsal above last fourth of anal base. Pectorals moderate, not reaching pelvics with a strong internally serrated spine. Pelvics reaching anal; origin below last-dorsal ray. Anal moderately long; origin behind last dorsal ray. Caudal deeply forked. Lateral line. Skin smooth, Branchiostegal 9. Air bladder 3 chambered and thick walled.

Distribution.—India.

356. **Neotropius khavalchor** Kulkarni

1952. *Neotropius khavalchor* Kulkarni, *Rec. Indian Mus.*, **49**, p. 232, text-figs. 1, 2 (type locality : Krishna river, near Islampur, Dt. Satara; Panchaganga river, near Kolhapur; type in the Zoological Survey of India, Calcutta).

Vernacular names.—INDIA : *Khavalcher,* Satara, Kolhapur, Maharashtra.

B. 9; D. 1/6-7/0; P. 1/7; V. 1/5; A. 2-3/22—33; C. 17.

Body elongate, moderately compressed, dorsal profile in an ascending straight line from snout end to dorsal origin, descending posteriorly to caudal base, ventral profile gradiently arched. Head short, tapering width 1·5—1·6 and height 1·4—1·7 in its length, 5·0; depth 5·0—5·6 in total length (3·3—3·8 and 3·8—4·4 in standard length). Snout 3·0 in head. Eyes lateral, prominent without adipose lids, in the middle of head, 4·5—4·6 in head, 1·6 in snout, 2·0 in convex interorbital. Mouth wide inferior, devoid of lips except at angle of jaws, cleft of mouth not extending beyond anterior margin of orbit, gape of mouth, 1·5 in width of head, upper jaw, much longer over hanging, denticulated from tip to mouth border. Maxillary barbels extending to pectoral end, outer mandibular barbel to pectoral base, the nasal barbel to slightly behind eye. Teeth villiform in band in jaws, a crescentic vomerine band; palatine teeth in 2 widely separate minute patches. Median longitudinal groove on head extending to base of occipital process. Occipital process long, slender, 5·0 times as long as broad at its base, reaching basal bone of dorsal. Rayed dorsal 1·2 in head with a strong slender spine, 1·4 in head, serrated internally, and with 3 or 4 denticulation externally towards the tip; origin equidistant between snout end and adipose dorsal origin, adipose dorsal short, origin above last fourth of anal base, 2·0 in eye. Pectorals not reaching pelvics, 1·4 in head with a strong short spine serrated internally with 8-13 denticulations, smooth externally. Pelvics reaching anal, 1·7 in head; origin below last dorsal ray, nearer to anal origin than to pectoral base and midway between snout end and caudal base. Anal moderately long, origin nearly 1·5 eye diameters behind last dorsal ray, base 4·5 in total length. Caudal deeped forked, 1·2 times head, lobes, subequal, 3·7—4·2 in total length. Lateral line.

Skin smooth. Silvery grey above pale below, occipital and caudal blotch may be present.

It attains 285 mm. in length; freshwater.

Distribution.—India : Krishna river near Islampur and Panchaganga river near Kolhapur, Maharashtra.

149. Genus **Pangasius** Valenciennes

1840. *Pangasius* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 45 (type, *Pimelodus pangasius* Ham., tautotypic).

1862. *Pseudopangasius* Bleeker, *Versl. Akad. Amsterdam*, **14**, p. 399 (type, *P. polyuranondon* Blkr., orthotypic).

1904. *Neopangasius* Popta, *Notes Leydan Mus.*, **24**, p. 180 (type, *N. nieuwenhuisii* Popta, orthotypic).

Body elongate, compressed. Head covered by skin except above where granulated. Eyes with free orbital margins. Nostrils not wide apart, the anterior on the upper edge of snout, the posterior with an anterior lip at a short distance behind the anterior. 2 pairs of barbels. Mouth small, subterminal, horizontal or slightly oblique. Teeth villiform in band in jaws; vomero-palatine in 2 or 3 or 4 separate patches or in one continuous patch. Rayed dorsal with a strong serrated spine with filamentous prolongation; a very small adipose dorsal. Pectoral with a strong denticulated spine. Pelvics with 6 rays. Anal with 28—40 rays. Caudal forked. Lateral line. Skin smooth, upper surface of head granulated. One or more auxillary pores. Air bladder large or moderate size with a caecum at the posterior end not enclosed in bone. Branchiostegals 9—11.

Distribution.—India, Pakistan, Burma, Malay Peninsula, Thailand, Java.

The genus **Pangasius** is represented by a single species in the Indian region.

357. **Pangasius pangasius** (Hamilton)

(Pl. III)

1822. *Pimelodus pangasius* Hamilton, *Fish. Ganges*, pp. 163, 376, pl. 33, fig. 52 (type locality : estuaries of Bengal).

1840. *Pangasius buchanani* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 45, pl. 425 (type locality : Ganges).

1846. *Pangasius djambal* Bleeker, *Nat. Gen. Arch. Ned. Ind.*, (2) **3**, p. 290 (type locality : Java).

1853. *Pangasius buchanani* Bleeker, *Verh. Bat. Gen.*, **25**, p. 118.

1858. *Pangasius buchanani* Blyth, *Proc. As. Soc. Bengal.*, p. 286.

1862. *Pangasius djambal,* Bleeker, *Atl. Ichth.*, **2**, p. 73. pl. 7.

1864. *Pangasius buchanani* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 62 (Ganges).

1864. *Pangasius djambal* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 62 (Java).

1877. *Pangasius buchanani* Day, *Fish. India*, p. 470, pl. 108, fig. 5.

1889. *Pangasius buchanani* Day, *Fauna Brit. India*, Fish., **1**, p. 142, fig. 61.

1890. *Pangasius buchanani* Vinciguerra, *Ann. Mus. Civ. nat. Genova*, (2) **9**, p. 211 (Rangoon).

1893. *Pangasius buchanani* Bridge & Haddon, *Phil. Trans. roy. Soc. London*, (B), **184**, pp. 214-219 (air-bladder).

1907. *Pangasius buchanani* Lloyd, *Rec. Indian Mus.*, **1**, p. 222 (Akyab).

1913. *Pangasius pangasius* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 256 (Java).

1937. *Pangasius pangasius* Nair, *Rec. Indian Mus.*, **39**, pp. 117-124 (air bladder).

1937. *Pangasius pangasius* Hora, *J. Bombay nat. Hist. Soc.*, **40**, p. 362 text-figs., 3, 4 (India; Orissa, Bharani river, Burma, Siam, Malay, Peninsula, Java).

1938. *Pangasius pangasius* Shaw & Shebbeare, *J. roy. As. Soc. Bengal. Sci.*, **3** (1937), p. 87 (Siliguri Bazaar).

1938. *Pangasius pangasius* Fowler, *List Fish. Malaya*, p. 47 (Malaya).

1945. *Pangasius pangasius* Smith, *U.S. nat. Mus. Bull.*, **188**, p. 366 (at Bang Sorn in the Menam Chao Phya above Bangkok).

Vernacular names.—INDIA : *Pangas*, Goalpara, Assam; *Pangas*, *Pungwas*, Bengal; *Jellum*, M.P. : *Jellum*, Orissa. *Coola Kellette*, Tamil; Standardised name : *Pangas*. BANGLADESH : *Pangas*. BURMA : *Nga dam*, *Ngatan*.

B. 9—10; D. 2/6-7; P. 1/12-13; V. 6; A. 30—34 (4-5/26—29); C. 19.

Body elongate, compressed. Head granulated above, 4·5—6·0; depth 5·0—6·5 in the total length (3·5—5·0, 4·0—5·5 in standard length). Snout obtusely rounded, 2·2—3·3 in head. Eyes lateral in the anterior half of head, 3·0—5·0 in head, 1·0—2·0 in snout, 1·4—3·0 in interorbital. Mouth inferior, lunate; width of gape equal to length of postorbital part of head or 3/7 of its length. Upper jaw longer and partly exposed; cleft reaching to below the hind nostril and opposite the centre of front edge of eye. Maxillary barbels extending to pectoral base, the mandibular barbels equal to half the length of head. Teeth villiform in band in jaws; vomero-palatine band composed of 4 separate patches or the 2 vomerine patches confluent with each other and with 2 palatine patches forming a crescentic band. A long narrow median longitudinal groove on head. Occipital process more than twice as long as broad at its base, reaching to the basal bone of dorsal. An elongated supracleithrum. Dorsal 1 1 in head with a moderately strong spine, almost as long as head behind the angle of mouth, 1 1 in head, strongly serrated internally, finely serrated externally; origin 2·0 or 3·5 eye diameters before pelvic origin, slightly nearer to snout end than to adipose dorsal origin; adipose dorsal origin 2 eye diameters before last anal ray; its base equals 1·5 eye diameters. Pectorals 1·7 in head, not reaching pelvics; its end opposite dorsal origin or to the middle of dorsal base, with a strong spine, 1 1—1·5 in head, strongly denticulated internally. Pelvics not reaching anal, 2·1—2·5 in head; origin just behind last dorsal ray, nearer to anal origin than to pectoral base. Anal moderate; origin 3·4—4·0 eye diameters behind pelvic origin, base 4·7 in standard length. Caudal deeply forked, lobes pointed, upper lobe the longer, 1 1 in head, 4·9—6·6 in total length; least height of caudal peduncle 1·5—2·0 in its length. Lateral line.

Skin smooth. Silvery, darkest along the back, glossed with purple on sides; cheek and outer surface of head shot with gold.

It attains 1220 mm. in length; in estuaries and in large rivers.

Distribution.—India : large rivers and estuaries of India, Pakistan and Burma—Malay Peninsula, Thailand, Java; in the latitudinal and longitudinal range of 11° 24′—22° 55′N., 76° 47—96° 13′ E., in the Indian region and 13° 42′ N.—6° 72′S., 100° 30′—106° 30′E. beyond Indian region.

150. Genus **Proeutropiichthys** Hora

1937. *Proeutropiichthys* Hora, *Curr. Sci.*, 5, p. 353 (type, *Eutropius macrophthalmus* Blyth, orthotypic).

Body elongate, laterally compressed. Head compressed, covered with skin. Eyes with broad adipose lids, ventro-lateral. Nostrils close together with the nasal barbel between them. 4 pairs of barbels. Mouth terminal, upper jaw the longer. Teeth villiform in band in jaws; vomero-palatine in 4 or 2 distinct patches. Median longitudinal groove on head; occipital process not reaching basal bone of dorsal. Gill openings wide; gill membranes free from isthmus. Rayed dorsal with a spine internally serrated, smooth or rugose externally. Pectorals with a strong spine, serrated internally, rugose or smooth externally. Pelvics with 6 rays. Anal long. Caudal deeply forked. Lateral line. Skin smooth. Air bladder of moderate size. Branchiostegals 6.

Distribution.—India, Burma.

The genus **Proeutropiichthys** is represented by a single species in the Indian region.

358. **Proeutropiichthys taakree** (Sykes)

1838. *Hypophthalmus taakree* Sykes, *Proc. zool. Soc., Lond.*, Part 6, p. 163.

1841. *Hypophthalmus taakree* Sykes, *Trans. zool. Soc. Lond.*, **2**, p. 369. pl. 64, fig. 4 (type locality : Beema river, near Pairgaon).

1849. *Schilbe sykesii* Jerdon, *Madras J. Litt. Sci.*, **15**, p. 335 (the Cauvery).

1849. *Bagrus taakree* Jerdon, *Madras J. Litt. Sci.*, **15**, p. 336.

1860. *Eutropius macrophthalmus* Blyth, *J. As. Soc. Bengal*, **29**, p. 156 (type locality : Tenasserim).

1864. *Pseudeutropius meagalops* Günther, *Cat. Fish. Brit. Mus.* (type locality : Central India, Godavari at Mahades).

1877. *Pseudeutropius taakree* Day, *Fish. India*, p. 471, pl. 109, fig. 4 (Poona, the Deccan, the rivers of Kistna and Jumna; the specimen figured life size, was from Kurnool).

1889. *Pseudeutropius taakree* Day, *Fauna Brit. India*, Fish., **1**, p. 138.

1890. *Pseudeutropius taakree* Vinciguerra, *Ann. Mus. Civ. Stor. Nat. Genova*, (2) **9**, p. 205.

1890. *Pseudeutropius taakree* Vinciguerra, *Pesci di Birmania*, pp. 28, 77 (Rangoon; Mandalay : Teinzo).

1929. *Pseudeutropius taakree* Prashad & Mukerji, *Rec. Indian Mus.*, **31**, p. 178 (Indawgyi Lake, Upper Burma).

1938. *Proeutropicthys taakree* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 23 (Deolali) (error in spelling).

1941. *Proeutropiichthys taakree* Hora, *Rec. Indian Mus.*, **43**, p. 106, text-fig. 4.

1941. *Proeutropichtys taakree* Hora & Misra, *J. Bombay nat. Hist.* Soc., **43**, p. 22 (Poona) (error in spelling).

1942. *Proeutropiichthys taakree* Hora, *Rec. Indian Mus.*, **43**, p. 106, text-fig. 4.

1948. *Pseudotropius taakree* Chacko & Kuriyan, *Proc. Indian Acad.* Sci., **28**, p. 171 (Tungabhadra R., Nidusiri, Kurnool, Madras) (error in spelling).

Vernacular names.—INDIA : *Nauy-kelithi*, Malayalam; *Moonia*, Poona. BURMA : *Ngamyin-ok-pha*.

B. 6; D. 1/6-8/0; P. 1/8-11; V 6; A. 42—52 (3—4/39—48);C. 17.

Body elongate, laterally compressed, abdomen more arched than back. Head covered with soft skin, width equalling half its length, 5·8—6·3; depth 5·8—6·0 in total length (4·8—5·3 and 4·8—5·0 in standard length). Snout 4·0 in head. Eyes with broad adipose lids, behind the angle of mouth, partly under surface of head, 2·7—3·0 in head, 0·6—1·0 in snout, 1·0 in interorbital. Mouth terminal; width of gape of mouth 2/5 of the length of head, upper jaw overlapping the lower. Maxillary barbels extending to anal, outer and inner mandibular barbels, a little longer than head, the nasal barbels less than half the length of head. Teeth villiform in band in jaws; vomerine and palatine in distinct patches or vomerine band interrupted in the middle, each half being sub-continuous with palatine band. Median longitudinal groove on head reaching occipital process. Occipital process long and slender, scarcely reaching basal bone of dorsal. Dorsal 1·3 in head, with a spine smooth or finely serrated or granulated externally, serrated posteriorly; origin 1/2 eye diameter before pelvic origin; a very small adipose dorsal, its base, 3·0 in eye diameter, origin above last third of anal base; 2·5 eye diameters before last anal ray. Pectorals 1 1 in head, reaching beyond pelvics to anal origin with a strong spine serrated internally, granulated or smooth externally. Pelvics 2·0—2·5 in head, reaching beyond anal origin; origin 1/2 eye diameter behind dorsal origin. Anal long; half an eye diameter behind last dorsal ray; base 1·8 in standard length. Caudal deeply forked, lobes sub-equal, 1·0 in head, 5·8—6·3 in total length; least length of caudal, peduncle twice its length. Lateral line.

Skin smooth.

It attains 457 mm. in length; in fresh and tidal waters.

Distribution.—India : The Yamuna; M.P.; the Beema R., near Pairgaon, Poona, Maharashtra; Tungabhadra R. and Cauvery R., Mysore; Krishna R., and Godavery R., Kurnool, Andhra: Orissa. Burma; Rangoon, Mandalay, Teinzo, Indawgyi Lake, Tenasserim.

151. Genus **Pseudeutropius** Bleeker

1839. *Pachypterus* Swainson, *Nat. Hist. Animal.*, **2**, p. 306 (type, *Silurus atherinoides* Bl., logotypic); inadmissible being preoccupied in Coleoptera, 1833.

1862. *Pseudeutropius* Bleeker, *Versl. Akad. Amsterdam*, **14**, p. 398 (type, *P. brachyopterus* Blkr., orthotypic).

Body elongate, compressed. Head conical, covered with skin. Eyes large with free orbital margins. Nostrils close together with a barbel between them. 4 pairs of barbels. Mouth small terminal, upper jaw the longer. Teeth villiform in band in jaws; vomero-palatine in 2 separate transverse or divergent or 2 broadly oval patches, narrower or wider than premaxillary band, with a narrow or wide space between, medianly sometimes connected by a linear series. Median longitudinal groove on head. Occipital process reaching or not reaching basal bone of dorsal. Gill openings wide; gill membranes free from isthmus. A short rayed dorsal with a strong spine serrated on both edges. A small adipose dorsal. Pectorals with a strong spine serrated on both edges. Pelvics with 6 rays. Anal long with 30—43 rays. Caudal deeply forked. Lateral line. Skin smooth. Air bladder large somewhat heart-shaped, notched anteriorly forming blister-like areas above pectoral. Branchiostegals 6-9.

Distribution.—India, Pakistan and Bangladesh.

The genus **Pseudeutropius** is represented by two species in the Indian region.

Key to species of genus **Pseudeutropius** Bleeker

1. Anal base 3·0 in standard length; anal origin nearly half head length behind last dorsal ray; pectoral reaching pelvics, ends far off from anal origin ; least height caudal peduncle 2·0 in its length	*P. mitchelli*
2. Anal base 2·0—2·1 in standard length; anal origin ½ eye diameter behind last dorsal ray; pectorals reaching beyond pelvics just reaching anal origin; least height of caudal peduncle 1·0 in its length	*P. atherinoides*

359. Pseudeutropius atherinoides (Bloch)

1794. *Silurus atherinoides* Bloch, *Naturg. Ausland Fische*, **8**, p. 48, pl. 371, fig. 1 (type locality : Tranquebar).

1822. *Pimelodus urua* Hamilton, *Fish. Ganges*, pp. 177, 377 (type locality : rivers & ponds of northern parts of Bengal).

1822. *Pimelodus anguis* Hamilton, *Fish. Ganges*, pp. 180, 377, pl. 29, fig. 59 (type locality : rivers of Bengal).

1849. *Bagrus atherinoides* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 336 (ponds near Madras).

1853. *Bagrus exodon* (*nec.* Valenciennes) Bleeker, *Verh. Bat. Gen.*, **25**, p. 111 (Bengal).

1864. *Pseudeutropius atherinoides* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 58.

1877. *Pseudeutropius atherinoides* Day, *Fish. India*, p. 473, pl. 109, fig. 2 (throughout Sind, India excluding the Western Coast and Assam).

1889. *Pseudeutropius atherinoides* Day, *Fauna Brit. India*, Fish., **1**, p. 141.

1912. *Pseudeutropius atherinoides* var. *walkeri* Chaudhury *Rec. Indian Mus.*, 7, p. 444, pl. 41, fig. 3 (type locality : Sripur, Saran, Bihar).

1936. *Pseudeutropius atherinoides* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 35 (Mahanaddi, Bihar, Orissa).

1941. *Pseudeutropius atherinoides* Hora, *Rec. Indian Mus.*, **43**, p. 103, text-fig. 3.

Vernacular names.—INDIA : *Boh-du-ah*, Assam; *Patasi*, *Doya*, Bengal; *Puttahre*, M.P.; *Battuli*, *Bo-potassi*, Oriya; *Put-tul*, *Chel-lee*, Punjab; *Akku-jella*, Telegu; *Puttahra*, U.P. BANGLADESH : *Patasi*, *Puttul*, *Chelle*, *Ahhee*.

B. 6; D.1/5-6/0; P. 1/7 V. 6; A. 33-41 (3/30—38); C. 17.

Body elongate, laterally compressed. Head covered with skin, greatest width equal to 2/3—1/2 its length, 4·7—5·2; depth 4·5—5·2 in total length (4·2—4·5 and 4·1—4·8 in standard length). Snout 2·5—3·2 in head. Eyes with free orbital margin, without adipose lids, behind cleft of mouth, lower surface of head 2·5-4·0 in head, 0·5—1·5 in snout, 1·0 in interorbital. Mouth terminal, upper jaw elongated and projecting considerably beyond the lower. Maxillary barbels reaching to pelvics, outer and inner mandibular barbels equal to or slightly longer than head, the nasal barbels longer than head. Teeth villiform in band in jaws; vomero-palatine in 2 patches, much narrower than premaxillary band, transverse or divergent posteriorly with an interspace in the median line. Longitudinal groove on head extending to base of occipital process. Occipital process 4·0 times as long as broad at its base, reaching basal bone of dorsal. Dorsal 1·2 in head, with a spine finely serrated internally; rugose externally, 1·5—1·7 in head; origin half an eye diameter before pelvic origin. Pectorals 1·0 in head, extending beyond pelvics, just reaching anal origin, with a strong spine, roughened externally with 10 internal denticulations. Pelvics 1·7 in head, reaching anal origin; origin half an eye diameter behind dorsal origin; a small adipose dorsal above last 3rd of anal fin; origin 2·0 eye diameters before last anal ray. Anal long, origin half an eye diameter behind last dorsal ray; base 2·0—2·1 in standard length. Caudal deeply forked, equal to head or slightly smaller, upper lobe slightly longer, 4·7—5·2 in total length; least height of caudal peduncle 1·0 in its length. Lateral line.

Skin smooth. Silvery greenish along the back with 3 or 4 band along the side formed by black spots; a black spot on occiput and at the base of dorsal.

It attains 127 mm. in length; in freshwater, tidal rivers.

Distribution.—Throughout India (excluding western coast and Assam), Bangladesh and Pakistan.

360. **Pseudeutropius mitchelli** Günther

1864. *Pseudeutropius mitchelli* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 59 (type locality : Madras Presidency).

1877. *Pseudeutropius sykesii* (*nec.* Jerdon) Day, *Fish. India*, p. 473, pl. 109, fig. 5.

1941. *Pseudeutropius mitchelli* Hora, *Rec. Indian Mus.*, 43, p. 104.

B. 8-9; D. 1/7/0; P. 1/9; V. 6; A. 35-37 (3/32—34); C. 17.

Body elongate, laterally compressed. Head covered with soft skin, rather higher than wide, greatest width more than one half of its length, 5·3—6·0; depth 5·6—6·0 in total length (4·7—5·4 and 4·7—5·1 in standard length). Snout 4·1 in head. Eyes large, without adipose lids, 3·0—3·5 in head, 1·0 in snout, 1·2 in interorbital. Mouth terminal, upper jaw longer, angle of mouth on a level with lower edge of orbit. Maxillary barbels extending to pelvics the outer and inner mandibulars to pectoral and nasal barbels to the end of head or posterior margin. Teeth villiform in band in jaws; vomero-palatine in 2 separate broadly oval patches with a wide interspace medianly or as 2 narrow elongate patches with a narrow interspace between them. Median longitudinal groove extending to base of occipital process. Occipital process slender, extending to triangular basal bone of dorsal, half as long as the occipital process. Distance between occiput and dorsal origin equal to distance between snout and occiput. Dorsal 1·4 in head, with a spine serrated internally, 1·5 in head; origin an eye diameter before pelvic origin; a very small adipose dorsal, 4·0 in eye diameter; origin above last 5th of anal base and an eye diameter before last anal ray. Pectorals 1·3, reaching pelvics not anal origin, with a spine as long as head minus snout, serrated internally, extending beyond the base of dorsal spine. Pelvics 1·9 in head, not reaching anal origin; origin an eye diameter behind dorsal origin and below 5 or 6th branched ray of dorsal. Anal long, origin 1·7 eye diameters behind last dorsal ray; base 3·0 in standard length. Caudal deeply forked, 1·1 in head, 5·8—6·6 in total length; least height of caudal peduncle 2·1 in its length.

Uniform silvery.

It attains 89 mm. in length; freshwater.

Distribution.—India : Madras.

152. Genus **Silonia** Swainson

1839. *Silonia* Swainson, *Nat. Hist. Animal.*, **2**, p. 305 (type, *Pimelodus silondia* Ham. *Silonia lurida* Sw., logotypic).

1840. *Silundia* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 49 (type, *Pimelodus silondia* Ham., tautotypic).

1937. *Silonopangasius* Hora, *Curr. Sci.*, **5**, p. 352 (type, *Ageneiosus childreni* Sykes, orthotypic).

Body elongate, compressed. Head covered with skin. Snout broad. Eyes with narrow adipose lids, lateral. Nostrils close together, anterior in front of snout, a little external to the posterior pair. No nasal barbel; a pair of maxillary and a pair of mandibular. Mouth oblique, lower jaw longer. Teeth in jaws caniniform; vomero-palatine V-shaped or horse-shoe-shaped. Median longitudinal groove on head; occipital process not reaching basal bone of dorsal. Rayed dorsal with a spine, rugose externally, serrated internally. An adipose dorsal. Pectorals with a strong spine serrated internally, roughened externally. Pelvics with 6 rays. Anal long. Caudal deeply forked. Lateral line. Skin smooth. Air bladder kidney shaped, convex anteriorly, having its lateral margins protected by bone, greatly reduced. An auxiliary pore. Brachiostegals 11—12.

Distribution.—India.

Key to species of genus **Silonia** Swainson

1. Maxillary barbels extending to opercle ; mandibular barbels equal to eye diameter ; anal rays 44—50	*S. childreni*
2. Maxillary barbel minute, 1·3—2·5 eye diameter ; mandibular barbel vestigial ; anal rays 40—46	*S. silondia*

361. **Silonia childreni** (Sykes)

(Text-fig. 33)

1838. *Ageneiosus childreni* Sykes, *Proc. zool. Soc. Lond.*, *Part* 6, p. 165.

1841. *Ageneiosus childreni* Sykes, *Trans. zool. Soc. Lond.*, **2,** p. 375 (type locality : Mota Mola river, Poona).

1876. *Silundia sykesii* Day, *Trans. Linn. Soc., Zool.*, **12,** p. 569 (type locality : Kistna river).

1877. *Silundia sykesii* Day, *Fish. India*, p. 487, pl. 114, fig. 2 (rivers of the Deccan and the Kistna and Godavery to their terminations).

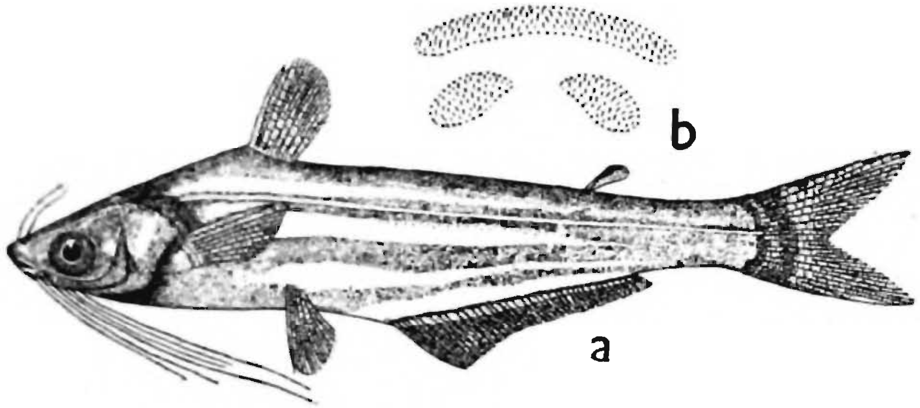
1889. *Silundia sykesii* Day, *Fauna Brit. India, Fish.*, **1,** p. 144.

1941. *Silonopangasius childreni* Hora, *Rec. Indian Mus.*, **43,** p. 98, text-fig. 1.

1942. *Silonopangasius childreni* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43,** p. 222 (Poona).

1948. *Silundia sykesii* Chacko, *J. Bombay nat. Hist. Soc.*, p. 1 (Periyar lake).

1956. *Silonopangasius childreni* Chacko, Kuriyan & Thyagarajan, *Contr. Freshwater Fish. Biol. Stn. Madras*, No. 12, p. 19 (Cauvery R.).



TEXT-FIG. 33.—*Silonia childreni* (Sykes) (*a*) Lateral view (*b*) Dentition (After F. Day)

Vernacular names.—INDIA : *Seelundh*, Poona; *Wal-la-ke Kel-le-tes*, *Poo-nat-tes*, Tamil; *Wan-jou*, Telegu.

B. 12; D. 1/7/0; P. 1/12; V. 6; A. 44—50 (2—3/42—47); C. 19.

Body elongate, compressed. Head covered with soft skin, greatest width equalling its length behind middle of eyes, 5.2; depth 5.7 in total length (4.5 and 5.0 in standard length). Snout broad 3.5 in head. Eyes lateral with a narrow, free adipose lids, 3.5 in head, 1.0 in snout, 1.3 in interorbital. Mouth wide, cleft not extending to front margin of eye; gape equalling 4/11 of the length of head, lower jaw the longer, curved upwards in the middle. Maxillary barbels extending to opercle, mandibular barbels equal to an eye diameter. Teeth caniniform in jaws; a horse-shoe shaped vomero-palatine band. Dorsal 1.3 in head, with a weak spine as long as head minus snout, roughened externally serrated internally; origin nearer to snout end than to adipose dorsal origin and caudal base, 1/4 eye diameter before pelvic origin; a very small adipose dorsal, base 1/4 eye diameter; origin above last fifth of anal base and 1.5 eye diameters before last anal ray. Pectorals reaching pelvics, 1.4 in head, with a moderately strong spine serrated internally, roughened externally. Pelvics reaching anal 2.5 in head, origin 1/2 eye diameter behind dorsal ray and nearer to anal origin than to pectoral base. Anal long; origin an eye diameter behind last dorsal ray; base 2.4 in standard length. Caudal deeply forked, lobes subequal slightly longer or smaller than head 4.7—5.7 in total length; least height of caudal peduncle 1.5 in its length. Lateral line.

Skin smooth. Bluish above becoming white on sides and below; fins tipped grey.

It attains 180 mm. in length; in freshwater.

Distribution.—India : the rivers of the Kerala, Deccan, the Cauvery, the Krishna, the Godavery.

362. **Silonia silondia** (Hamilton)

(Text-fig. 34)

1822. *Pimelodus silondia* Hamilton, *Fish. Ganges*, pp. 160, 375, pl. 7, fig. 50 (type locality : Gangetic estuaries).

1830. *Pimelodus silondia* Taylor, *Gleanings in Science*, p. 171 (air bladder).

1838. *Silonia lurida* Swainson, *Nat. Hist. Animal.*, **1**, p. 345, fig. 85.

1840. *Silundia gangetica* Valenciennes, *Hist. nat. Poiss.*, **15**, p. 49, p. 426 (type locality : Ganges).

1853. *Silundia gangetica* Bleeker, *Verh. Bat. Gen.*, **25**, p. 118.

1858. *Silundia gangetica* Blyth, *Proc. As. Soc. Bengal, Sci.*, p. 28.

1863. *Silundia gangetica* Bleeker, *Nat. Tijds.. Dierk.*, **1**, p. 108.

1864. *Silundia gangetica* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 65 (Ganges).

1877. *Silundia gangetica* Day, *Fish. India*, p. 488, pl. 114, fig. 3.

1889. *Silundia gangetica* Day, *Fauna Brit. India*, Fish., **1**, p. 145, fig. 62.

1894. *Silundia gangetica* Bridge & Haddon, *Phil. Trans. roy. Soc. Lond.*, (B), **184**, pp. 222, 223 (air-bladder).

1936. *Silundia gangetica* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 37 (Mahanaddy river).

1937. *Silonia silondia* Hora, *Curr. Sci.*, **5**, p. 352.

1938. *Silonia silondia* Shaw & Shebbeare, *J. roy. As. Soc. Bengal Sci.*, **3**, p. 89, text-fig. 87 (Siliguri bazar).

1938. *Silonia silondia* Nair, *Rec. Indian Mus.*, **40**, pp. 5-11, 6 figs. (air-bladder).

1938. *Silonia silondia* Hora, *J. Bombay nat. Hist. Soc.*, **40**, p. 141.

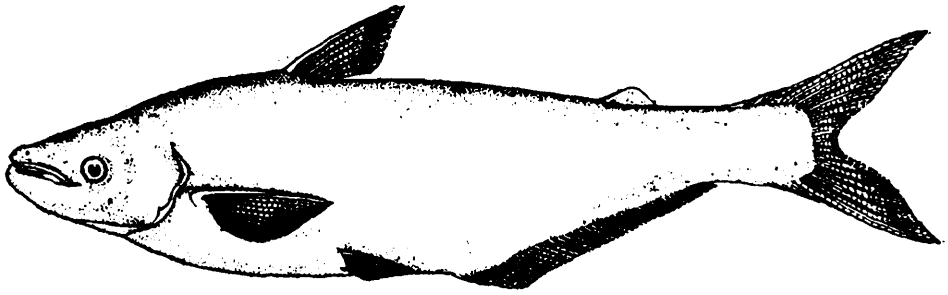
1948. *Silundia silundia* Chacko & Kuriyan, *Proc. Indian Acad. Sci.*, **28**, p. 171 (Tungabhadra R.)

1952. *Silonia silondia* Chacko, *Contr. Freshwater Fish. Biol. Stn. Madras*, No 4, p. 5 (Mettur Dam).

1952. *Silonia silondia* Job, David & Motwani, *J. As. Soc. Bengal Sci.* **18**, p. 170 (below Anderson Weir, Damodar R.).

1954. *Silonia silondia* Chacko, Kuriyan & Thyagarajan, *Contr Freshwater Fish. Biol. Stn. Madras*, No. 12, p. 19 (Cauvery R.).

1955. *Silonia silondia* Job, David & Das, *Indian J. Fish.*, 2, p. 15 (Mahanadi R.).



TEXT-FIG. 34.—*Silonia silundia* (Ham.) (After S. L. Hora)

Vernacular names.—INDIA : *Silun, Dhain, Silon, Silond, Silondia-vacha*, W. Bengal; *Baikar*, Gorakhpur; *Silond*, M. P.; *Jilung*, Oriya; *Silond*, Punjab; *Wanjau*, Telegu. BANGLADESH: *Silog, Silond*. PAKISTAN : *Silond.*

B. 11-12; D. 1/7/0; P. 1/10-12; V. 6; A. 40-48 (4/36-44); C. 17.

Body elongate, compressed. Head covered with soft skin, width about 2/3 of its length, 5 ·0—5 ·8; depth 4 ·7—7 ·4 in the total length (4 ·0—4 ·6 and 4 ·0—6 ·0 in standard length). Snout broad, 2 ·1—3 ·2 in head. Eyes with narrow adipose lids, lateral, 3 ·1—4 ·4 in head, 1 ·0—1 ·5 in snout, 1 ·2—2 .0 in interorbital. Mouth slightly ascending, gape exceeding 1/2 the length of head, lower jaw broadly pointed in the middle and longer than upper. Maxillary barbels in groove not extending beyond eye, the mandibular barbels very short. Teeth in jaws caniniform, in 2 series in each jaw, outer series projecting beyond mouth opening; vomero-palatine teeth villiform, in V-shaped band. Median longitudinal groove on head extending to occipital process. Occipital process 3 ·0 times as long as broad not reaching basal bone of dorsal by a considerable interspace between them. Dorsal 1 ·2 in head with a spine, 1·3—1 ·9 in head, rugose externally, serrated internally in its upper portion; origin nearer to snout end than adipose dorsal origin and caudal base, opposite pelvic origin and before end of pectoral spine; a very small adipose dorsal, its base 1/4 eye diameter and above last fifth of anal base and 1 ·5 eye diameters before last anal ray. Pectorals 1 ·2 in head extending beyond pelvics to last dorsal ray with a spine, 1·3 in head serrated internally. Pelvics not reaching anal, 1·8 in 2·1 in head; origin opposite dorsal origin. Anal long; origin 1·7 eye diameters behind pelvic origin and an eye diameter behind last dorsal ray. Caudal forked, equal to or slightly larger than head, lobes sub-equal, 5·0—5·5 in total length; least height of caudal peduncle 1·5—2·0 in its length. Lateral line.

Skin smooth. Bluish above becoming silvery on sides; fins tipped grey.

It attains 1830 mm. in length; in fresh and tidal waters.

Distribution.—India : the Damodar, the Mahanadi the Cauvery, the Tungabhadra rivers.

LVII. Family SILURIDAE

Body elongate, scaleless, compressed. Head compressed or depressed, covered with soft skin. Snout depressed, short or slightly produced. Eyes lateral, subcutaneous, or with free orbital margins. Nostrils remote from each other. Barbels 2, 3 or 4 pairs. Mouth oblique or transverse, lower or upper jaw longer. Teeth widely set, longer or villiform in jaws; vomerine teeth villiform in interrupted or uninterrupted band; palate edentulous. Gill openings wide; gill membrane free from isthmus. A short spineless rayed dorsal present or absent. No adipose dorsal. Pelvics with 6—14 rays, small, or rudimentary or absent. Anal very long, confluent or non confluent with caudal. Caudal deeply forked, lobes rounded or pointed or cut square. Air bladder not enclosed in bony capsule. Lateral line. Branchiostegals 9—21.

Upper Miocene to recent.

The family SILURIDAE is represented by three genera in the Indian region.

Key to genera of family SILURIDAE

1. Cleft of mouth horizontal ; upper jaw longer ; barbels 6 (4 in some adults)	**Silurus**
2. Cleft of mouth oblique ; lower jaw longer ; barbels 2 or 4	3

3.	Cleft of mouth extending beyond front margin of eye ; eye above level of angle of mouth	**Wallago**
4.	Cleft of mouth not extending beyond front margin of eye; eye below or on a level with angle of mouth.	**Ompok**

153. Genus **Ompok** Lacèpède

1803. *Ompok* Lacépède, *Hist. nat. Poiss.*, **5**, p. 49 (type, **0.** *siluroides* Lac., orthotypic).

1822. *Callichrous* Hamilton, *Fish. Ganges*, p. 149 (type, *Silurus bimaculutus* Bl.).

1858. *Siluroides* Bleeker, *Ichth. Archipel. Ind.*, **1**, p. 271 (type, *Silurus hypophthalmus* Blkr., logotypic).

1858. *Pseudosilurus* Bleeker, *Ichth. Archipel. Ind.*, **1**, p. 275 (type, *Silurus* (*Callichrous*) *pabda* Ham.)

Body elongate, compressed. Head compressed, broad, covered with skin. Snout depressed. Eyes subcutaneous, lateral, lower border below or on a level with cleft of mouth. Nostrils remote from each other. Mouth oblique, gape not extending front margin of eye; the lower jaw the longer. Barbels 2 or 4, the maxillary and mandibular, the latter often rudimentary or absent. Gill opening wide; gill membranes free from isthmus, deeply notched and overlapping. Teeth villiform in band in jaws; vomerine teeth in an uninterrupted or interrupted band; palate edentulous. Rayed dorsal without spine, short, rudimentary or absent; no adipose dorsal. Pectorals with a spine. Pelvics with 7—10 rays, before or opposite or behind dorsal origin. Anal ray long continuous or non-continuous with caudal, with a very narrow notch. Caudal deeply forked, lobes pointed or rounded or not forked with oblique edge. Lateral line. Skin smooth. Air bladder small, not enclosed in bone. No auxiliary pore. Branchiostegals 9—15.

Distribution.—India, Pakistan, Bangladesh, Nepal, Burma, Sri Lanka, Malaya, Thailand, Chusan, Java.

Key to species of genus **Ompok** Lacèpède

1.	Anal confluent with caudal; caudal not forked ; anal rays 47	*O. sindensis*
2.	Anal not united with caudal ; caudal forked ; anal rays 50-75 ;	3

3. Caudal lobes rounded ; lower border of eye on level of the cleft of mouth; anal origin just behind last dorsal ray ; anal rays 61-69 . *O malabaricus*

4. Caudal lobes pointed ; lower border of eye below level of the cleft of mouth; anal origin opposite to or 0·5—4·0 eye diameters behind last dorsal ray; anal rays 50-75 5

5. Maxillary barbels shorter than head ; pelvic rays 9-10; anal rays 66-71.. *O. pabo*

6. Maxillary barbels longer than head; pelvic rays 8 ; anal rays 50-75 7

7. Anal ray 70-75 ; pelvic origin just behind last dorsal ray . *O. canio*

8. Anal rays 50-69; pelvic origin opposite or 0·5-1·0 eye diameter before dorsal origin. . . 9

9. Pelvics not reaching anal origin; anal origin 2·0—4·0 eye diameters behind last dorsal ray ; anal rays 57-69. *O. bimaculatus*

10. Pelvics reaching anal origin ; anal origin opposite to or an eye diameter behind last dorsal ray ; anal rays 50-56 *O. pabda*

363. **Ompok bimaculatus** (Bloch)

(Text-fig. 35)

1797. *Silurus bimaculatus* Bloch, *Nat. Hist. Poiss,* pt. 2, p. 17, pl. 364 (type locality : Malabar).

1803. *Ompok siluroides* Lacèpède, *Hist. nat. Poiss.,* 5, p. 49, pl. 1, fig. 2 (type locality: Batavia).

1860. *Pseudosilurus macrophthalmus* Blyth., *J. As. Soc. Bengal,* **29,** p. 256 (type locality : Tenasserim; type in the Zoological Survey of India, Calcutta).

1864. *Callichrous bimaculatus* Günther, *Cat. Fish. Brit. Mus.,* **5,** p. 45.

1864. *Callichrous ceylonensis* Günther, *Cat. Fish. Brit. Mus.,* **5,** p. 46 (type locality : Ceylon).

1877. *Callichrous bimaculatus* Day (*partim*), *Fish. India,* p. 476, pl. 110, fig. 5, *nec.* fig. 4.

1877. *Callichrous macrophthalmus* Day, *Fish. India*, p. 478, pl. 110. figs. 2, 3.

1889. *Callichrous bimaculatus* Day(*partim*), *Fauna Brit. India*, Fish., **1**, p. 131, *nec*. fig. 57.

1913. *Callichrous bimaculatus* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 209, fig. 83.

1929. *Callichrous bimaculatus* Pillay, *J. Bombay nat. Hist. Soc.*, **33**, p. 358 (Cape Camorin).

1931. *Ompok bimaculatus* Chu, *Biol Bull. St. John's Univ.*, No. 1, p. 76 (Chusan; Yunnan).

1936. *Callichrous bimaculatus* Suvatti, *Index Fish. Siam*, p. 68 (Thailand).

1936. *Callichrous bimaculatus* Hora (*partim*), *Rec. Indian Mus.*, **38**, p. 361.

1937. *Ompok bimaculatus* Fowler, *Proc. Acad. nat. Sci. Philad.*, **89**, p. 134, figs. 8, 9 (Bangkok; Kemrat).

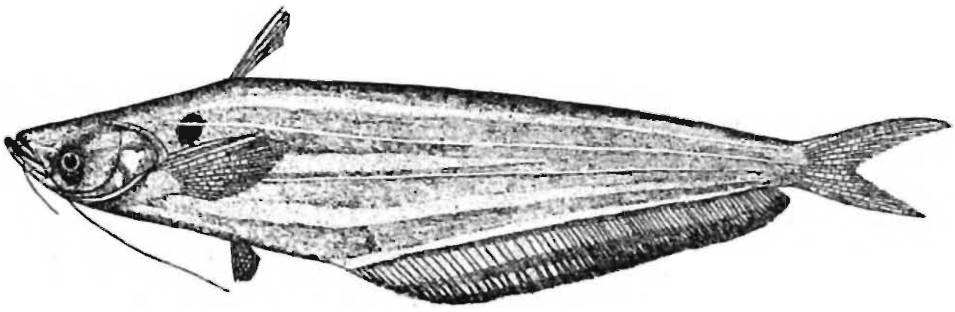
1938. *Callichrous bimaculatus* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 23 (Deolali).

1942. *Callichrous bimaculatus* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43**, p. 221 (Poona).

1946. *Callichrous bimaculatus* Setna & Kulkarni, *J. Bombay nat. Hist. Soc.*, **46**, p. 128 (Ahmedabad).

1952. *Ompok bimaculatus* Haig (*partim*), *Rec. Indian Mus.*, **48**, p. 104.

1955. *Ompok bimaculatus* Munro, *Mar. Freshwater Fish. Ceylon*, p. 49 (in freshwater).



TEXT-FIG. 35.—*Ompok bimaculatus* (Bl.) (After F. Day)

Vernacular names.—INDIA : *Moonee*, Deolali; *Chotra-vahlay*, Malayalam, *Pufta, Gugli*, M. P.; *Pobtah*, Oriya; *Goong waree*, Poona; *Chotah-wahlah*, Tamil; *Nga-tin*, Manipur. BURMA : *Buman*. SRI LANKA : *Kokussa, Pena valapotta, Valapotta*, Singhalese.

B. 12-15; D.4; P. 1/13; V. 8; A. 57-69 (2-3/55-56); C.17.

Body elongate, compressed. Head depressed, covered with skin, width equalling its length behind angle of mouth, 5·7—6·3; depth 5·7—6·3 in total length (5·2—5·3 and 4·7—5·3 in the standard length). Snout 3·4—3·8 in head. Eyes subcutaneous, lower border below level of the cleft of mouth, 4·5—5·0 in head, 1·3 in snout, 3·0 in interorbital. Mouth oblique, lower jaw longer. Maxillary barbels extending to pelvic origin or first third or middle of body; mandibular barbel to hind border of eye. Gill openings wide, gill membranes free from isthmus and separated from each other by a deep notch. Teeth villiform in band in jaws; vomerine band in 2 separate oval patches. Dorsal short, without spine, 1·5—1·8 in head, distance between snout end and dorsal origin 2·0—2·5 in distance between dorsal origin and caudal base. Pectorals 1·0—1·2 in head, reaching beyond pelvics, half to anal or touching anal fin with moderately strong spine feebly serrated internally. Pelvics reaching anal origin, 2·8—3·1 in head; origin opposite or one eye diameter before dorsal origin and 2·0 or 4·0 eye diameters before anal origin. Anal long; origin 2·0 or 4·0 eye diameters behind last dorsal ray; base 1·7 in standard length, not united with caudal, with no interspace or ½ eye diameter between caudal and last anal ray. Caudal forked, lobes pointed, upper lobe longer, 1·1 in head, 6·2—6·9 in total length. Lateral line.

Skin smooth. Silvery grey spot with gold, lighter below; humeral spot; caudal tipped black.

It attains 216 mm. in length; in freshwater.

Distribution.—India : Gujarat, Maharashtra, Kerala; Burma; Sri Lanka.—Thailand, Yunnan, Chusan, Batavia; in the latitudinal and longitudinal range of 8°—24° 44′N., S2° 38′—99° 3′ E. in the Indian region and 35°N.—6° 15′ *L*., 100° 30′—128′E. beyond Indian region.

364. **Ompok canio** (Hamilton)

1822. *Silurus canio* Hamilton, *Fish. Ganges,* p. 151 (type locality: north eastern Bengal).

1822. *Silurus duda* Hamilton, *Fish. Ganges,* p. 152 (type locality: Kosi R.).

1822. *Silurus chechra* Hamilton, *Fish. Ganges,* p. 152 (type locality: Kosi R.).

1839. *Callichrous nebulosus* Swainson, *Nat. Hist. Animal.,* **2,** p. 306 (=*Silurus chechra* Ham.).

1839. *Callichrus immaculatus* Swainson, *Nat. Hist. Animal.,* **2,** p. 306 (=*Silurus canio* Ham.).

1839. *Callichrus affinis* Swainson, *Nat. Hist. Animal.,* **2,** p. 306 (=*Silurus duda* Ham.).

1842. *Silurus indicus* Mc Clelland, *Calcutta J. nat. Hist.,* **2,** p. 583 (type locality : India).

1864. *Callichrous chechra* Günther, *Cat. Fish. Brit. Mus.,* **5,** p. 46.

1864. *Callichrous canio* Günther, *Cat. Fish. Brit. Mus.,* **5,** p. 48.

1877. *Callichrous bimaculatus* Day (*partim*), *Fish. India,* p. 476, pl. 110, fig. 4, *nec.* fig. 5.

1889. *Callichrous bimaculatus* Day (*partim*), *Fauna Brit. India,* Fish, **1,** p. 131, fig. 131.

1931. *Ompok canio* Chu, *Biol. Bull. St. John's Univ.,* No. 1, p. 76 (Chusan).

1936. *Callichrous bimaculatus* Hora (*partim*), *Rec. Indian Mus.,* **38,** p. 361.

1952. *Ompok bimaculatus* Haig (*partim*), *Rec. Indian Mus.,* **48,** p. 104.

Vernacular name.—INDIA : *Pah-boh,* Assam.

B. 14; D. 4; P. 1/14; V. 8; A. 70-75; C. 17.

Body elongate, compressed. Head depressed, covered with skin, 6·0; depth 6·2 in total length (5·3 and 5·5 in standard length). Snout depressed, 3·5 in head. Eyes subcutaneous, lateral, lower border below level of the cleft of mouth, 4·0 in head, 1·2 in snout. Mouth oblique, the lower jaw prominent. Maxillary barbels extending to end of pectoral, mandibular barbels to mid-orbit. Teeth villiform in band in jaws; vomerine teeth in 2 separate bands of moderate width. Dorsal short, 1·8 in head, without spine, distance between snout end and dorsal origin 2·4 in distance between dorsal origin and caudal base. Pectorals 1·1 in head, extending to anal origin with a moderately strong spine, serrated internally. Pelvics 2·3 in head, reaching anal origin; origin just behind last dorsal ray and 2·0 eye diameters before anal origin. Anal long ; origin 2·0 eye diameters behind last dorsal ray ; base 1·7 in standard length, not united with caudal with an interspace 1/8 eye diameter between last anal ray and caudal. Caudal deeply forked, upper lobe longer, 1·1 in head, 6·6 in total length. Lateral line.

Skin smooth. Greyish silvery; humeral spot remote from head.

It attains 155 mm. in length; in freshwater.

Distribution.—India : north-eastern Bengal; Nepal : Kosi river.—Chusan; in the latitudinal and longitudinal range of 26°—27° 3'N., 87°—88°E. in the Indian region and 128°E., 35°N., in Chusan in Korea.

365. **Ompok malabaricus** (Valenciennes)

(Text-fig. 36)

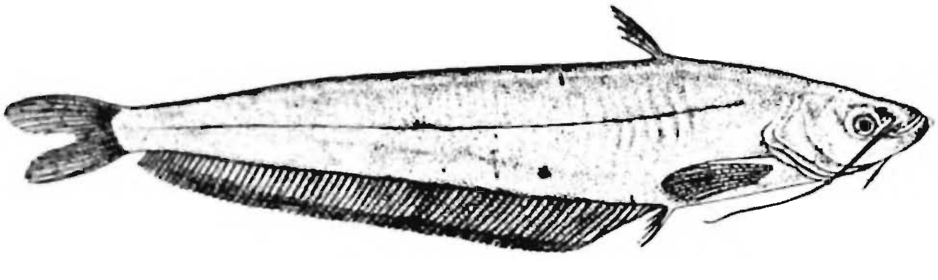
1839. *Silurus malabaricus* Valenciennes, *Hist. nat. Poiss.*, 14, p. 353 (type locality : Malabar).

1877. *Callichrous malabaricus* Day, *Fish. India*, p. 478, pl. 111, fig. 1 (specimen figured 16¼ inches in length was from Canara).

1889. *Callichrous malabaricus* Day, *Fauna Brit. India*, Fish., **1**, p. 133.

1929. *Callichrous malabaricus* Pillay, *J. Bombay. nat. Hist. Soc.*, **33**, p. 358 (Alleppy).

1952. *Silurus goae* Haig, *Rec. Indian Mus.*, **48**, p. 100, fig. 1.



TEXT-FIG. 36.—*Ompok malabaricus* (V.) (After F. Day)

Vernacular name.—INDIA : *Manjavahlay*, Malayalam.

B. 13—15; D. 4; P. 1/ 12—14; V. 7—8; A. 61—69 (3/58—66); C. 17.

Body elongate, compressed. Head depressed, covered with skin, width equalling its length minus snout, 5·5—6·1; depth 6·3—7·7 in total length (4·8—5·5 and 5·7—6·7 in standard length). Snout depressed, 3·5—4·5 in head. Eyes subcutaneous, lateral, lower border in level of cleft of mouth, 5·5—6·5 in head, 1·2—2·5 in snout, 3·0 in interorbital. Mouth oblique, lower jaw prominent. Maxillary barbels extending to pelvics or anal origin, the mandibular barbels short slightly beyond posterior border of eye. Teeth villiform in band in both jaws; vomerine band in 2 large crescent-shaped patches. Dorsal short, without spine, distance between snout end and dorsal origin 2·0—2·4 in distance between dorsal origin and caudal base. Pectorals 1·3 in head, reaching pelvics or anal origin with a moderately strong spine serrated internally. Pelvics reaching anal, 3·0 in head; origin ½ an eye diameter before dorsal origin and 1·0—1—5 eye diameters before anal origin. Anal long, base 1·6 in standard length, not united with caudal, with an interspace equal to half or one eye diameter between last anal ray and caudal; origin just behind last dorsal ray. Caudal deeply forked, lobes rounded, upper lobe the longer, 1·3—1·4 in head, 7·1—9·3 in total length. Lateral line. Gill rakers 11—12, curved, wide-set, slender.

Skin smooth. Deep greyish brown shot with purple becoming paler below; fin membranes densely spotted with black.

It attains 508 mm. in length; freshwater.

Distribution.—India: Mysore, Kerala.

366. **Ompok pabda** (Hamilton)

(Text-fig. 37)

1822. *Silurus pabda* Hamilton, *Fish. Ganges*, p. 150, pl. 25, fig. 47 (type locality : ponds and rivers of Bengal).

1838. *Silurus lamghur* Heckel, *Fische Kaschmir*, p. 82, tab. 12, figs. 5, 6 (type locality : Kashmir).

1839. *Silurus anostomus* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 363 (type locality : Bengal).

1839. *Callichrous vittatus* Swainson, *Nat. Hist. Animal.*, **2**, p. 306 (= *Silurus pabda* Ham.).

1867. *Cryptopterus latovittatus* Playfair, *Proc. zool. Soc. Lond.*, p. 16 (type locality : Cachar).

1871. *Callichrous egertonii* Day, *Proc. zool. Soc. Lond.*, p. 710 (type locality : Punjab).

1877. *Callichrous pabda* Day, *Fish. India*, p. 479, pl. 111, figs. 2, 3.

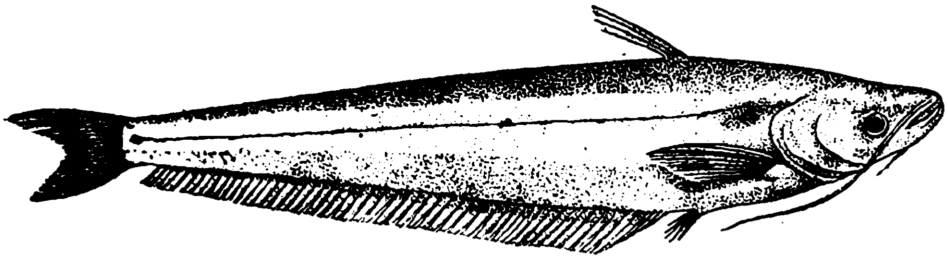
1889. *Callichrous pabda* Day, *Fauna Brit. India*, Fish., **1**, p. 133.

1931. *Callichrous pabda* Prashad & Mukerji, *Rec. Indian Mus.*, **29**, p. 177 (Indawygi Lake; Namkawngstum at Kamaing).

1936. *Callichrous bimaculatus* Hora (*partim*), *Rec. Indian Mus.*, **38**, p. 361.

1938. *Ompok pabda* Fowler, *List Fish. Malaya*, p. 46 (Kuala Lumpur).

1952. *Ompok bimaculatus* Haig (*partim*), *Rec. Indian Mus.*, **48**, p. 104.



TEXT-FIG. 37.—*Ompok pabda* (Ham.) (After F. Day)

Vernacular names.—INDIA : *Pabda*, Bengali; *Tapugulinda*, Mechi; *Pallu*, Punjab. BANGLADESH : *Pabda*. PAKISTAN: *Pallu*. BURMA : *Nga-nudan*.

B. 12—14; D. 4—5; P. 1/11—13; V. 8; A. 50—56 (2/48—54); C. 18.

Body elongate, compressed. Head depressed, covered with skin, width equalling its length minus snout, 5·0—5·4; depth 5·5—6·1 in the total length (4·5—4·7 and 4·4—4·8 in standard length). Snout 3·0—3·3 in head. Eyes subcutaneous, lateral, lower border below level of cleft of mouth, 5·0 in head, 1·2—1·5 in snout, 2·5—3·0 in interorbital. Mouth oblique, lower jaw longer. Maxillary barbels extending to middle or end of pectorals, mandibulars to hind border of eye. Gill openings wide;

gill membranes free from isthmus and separated from each other by a deep notch. Teeth villiform, in band in jaws; vomerine in 2 separate oval patches. Dorsal short, 1 ·5 in head, without spine, distance between snout end and dorsal origin 1 ·9—2 ·2 in distance between dorsal origin and caudal base. Pectorals 1 ·2 in head, reaching anal origin, with a moderately strong spine, finely serrated or smooth internally. Pelvics 2 ·8—3 ·0 in head, reaching anal origin; origin opposite or half an eye diameter before dorsal origin. Anal long, origin opposite to dorsal origin or half an eye diameter behind last dorsal ray; base 1 ·5—1 ·7 in standard length, not united with caudal; interspace between caudal and last anal ray equalling eye diameter. Caudal forked, lobes subequal, pointed, 1 ·6 in head, 8 ·0—8 ·6 in total length. Lateral line.

Skin smooth. Silvery grey dashed with gold becoming pale white below often with 2 dark lateral bands; humeral spot.

It attains 137 mm. in length; in fresh water.

Distribution.—India : Punjab, W. Bengal, Assam. Pakistan and Bangladesh. Burma : Indawgyi lake.—Malaya : Kuala Lumpur; in the latitudinal and longitudinal range of 25°5′—34°6′N., 74°26′—96°23′E. in the Indian region and 3°11′N., 101°40′ in Malaya.

367. **Ompok pabo** (Hamilton)

(Text-fig. 38)

1822. *Silurus pabo* Hamilton, *Fish. Ganges*, p. 153, pl. 17, fig. 48 (type locality : Brahmaputra R., Assam).

1864. *Callichrous pabo* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 48.

1869. *Callichrous nigrescens* Day, *Proc. zool. Soc. Lond.*, p. 616 (type locality: Burma).

1877. *Callichrous pabo* Day, *Fish. India*, p. 477, pl. 110, fig. 6 (Specimen figured was from Jumna; the Ganges, Jumna and Burma).

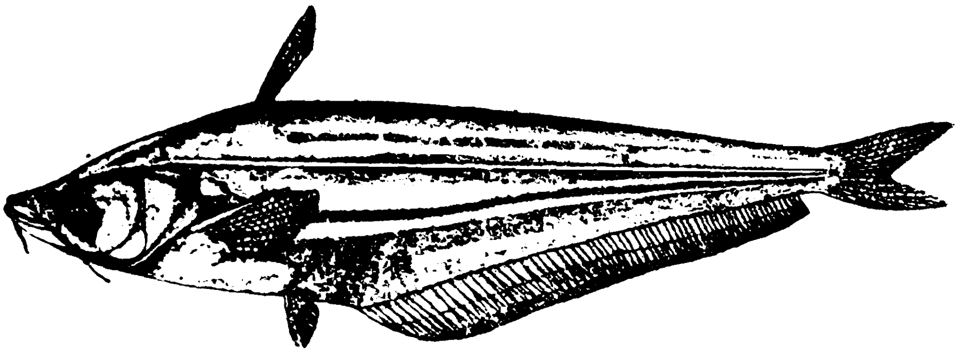
1889. *Callichrous pabo* Day, *Fauna Brit. India*, Fish., **1**, p. 132.

1910. *Callichrous pabo* Jenkins, *Rec. Indian Mus.*, **5**, p. 137 (Mandalay).

1929. *Callichrous pabo* Prashad & Mukerji, *Rec. Indian Mus.*, 31, p. 177 (Indawgyi Lake).

1936. *Callichrous pabo* Hora, *Rec. Indian Mus.*, 38, p. 361.

1952. *Callichrous pabo* Haig, *Rec. Indian Mus.*, 48, p. 106 (N. E. India and Burma).



TEXT-FIG. 38.—*Ompok pabo* (Ham.) (After F. Day)

Vernacular names.—INDIA : *Pabo*; Bengal. PAKISTAN : *Pabo.*

B. 12; D. 5; P. 1/14; V. 9—10; A. 66—71 (3/63-68); C. 17.

Body elongate, compressed. Head depressed, covered with skin, width equalling its length behind middle of eyes, 5·0—5·2; depth 5·0—5·5 in total length (4·3—4.5 and 4·4—4·9 in standard length). Snout depressed, 3·5 in head. Eyes subcutaneous, lateral, 4·0—4·4 in head, 1·2 in snout, 2·5 in interorbital, lower border below level of the cleft of mouth. Mouth oblique, lower jaw longer. Maxillary barbels short, reaching a little beyond hind border of eye, mandibular barbels equal to eye diameter. Teeth villiform, in band in jaws; vomerine teeth in 2 short separate transverse patches. Dorsal short, 1·7 in head; distance between snout end and dorsal origin 2·2 in distance between dorsal origin and caudal base. Pectorals 1·4 in head, reaching beyond pelvics but not reaching anal, with a moderately strong spine feebly serrated or entire internally. Pelvics 3·0 in head, not reaching anal; origin half eye diameter behind dorsal origin, 2·5 eye diameters before anal origin. Anal long; origin 2·0 eye diameters behind last dorsal ray; base 1·8 in standard length; not united with caudal, with an interspace equal to an eye diameter between last anal ray and caudal. Caudal deeply forked, upper lobe slightly longer, 1·4 in head, 7·0—7·7 in total length. Lateral line.

Skin smooth. Silvery grey above lighter below; humeral spot.

It attains 168 mm. in length; in freshwater.

Distribution.—India : the Yamuna, the Ganga, the Brahmaputra; Pakistan; Bangladesh. Burma: Mandalay, Indawgyi lake.

368. **Ompok sindensis** (Day)

1877. *Callichrous sindensis* Day, *Fish. India,* p. 476 pl. 110, fig. 1 (type locality : Indus R. at Sind; specimen figured is life size; type is in the Zoological Survey of India).

1889. *Callichrous sindensis* Day, *Fauna Brit. India,* Fish., **1,** p. 130, fig. 56.

1936. *Callichrous bimaculatus* Hora (*partim*), *Rec. Indian Mus.* **38,** p. 361.

1952. *Ompok bimaculatus* Haig (*partim*), *Rec. Indian Mus.*, **48,** p. 104.

Vernacular name.—PAKISTAN : *Dimmon***,** Sind.

B. 12; D. 4; P. 1/12; V. 8; A. 47 (2/45); C. 13.

Body elongate, compressed. Head depressed, covered with skin, width equalling its height or its length minus snout, 4·7; depth 4·2—4·7 in total length (3·8 and 3·1—3·5 in standard length). Snout depressed, 4·0—4·5 in head. Eyes subcutaneous, lateral, 4·5 in head, 1·0 in snout, 2·0 in interorbital, lower border in level of the cleft of mouth. Mouth oblique, lower jaw longer. Maxillary barbels reaching middle of pectorals, mandibulars nearly half as long as head. Teeth villiform, in both jaws; vomerine teeth in 2 separate oval patches. Dorsal short, 1·7 in head, without spine; distance between snout end and dorsal origin 1·6 in distance between dorsal origin and caudal base. Pectorals 1·1 in head, reaching beyond pelvics to anal, with a moderately strong spine as long as head behind the middle of eye, finely serrated internally. Pelvics 2·8 in head, reaching first anal ray; origin 1/4 eye diameter before dorsal origin and 1·5 eye diameters before anal origin. Anal long; origin an eye diameter behind last dorsal ray, continuous with caudal; base, 1·7 in standard length. Caudal not forked, with oblique edge, upper rays slightly longer, 1·2 in head, 5·6 in total length. Lateral line.

Skin smooth. Silvery grey becoming paler below; humeral spot; fins with many dark markings.

It attains 106 mm. in length; in freshwater.

Distribution.—Pakistan : The Indus.

154. Genus **Silurus** Linnaeus

1758. *Silurus* Linnaeus, *Syst. Nat.*, ed. 10, **1**, p. 304 (type, *S. glanis* L., logotypic).

1856. *Glanis* (*nec.* Rafinesque, 1818) Agassiz, *Proc. Amer. Acad' Arts. Sci.*, **3**, p. 333 (type *G. aristotelis* Ag., orthotypic) (Inadmissible).

1861. *Pterocrvptis* Peters, *Monotsb. Konig. Akab. Wiss. Berlin*, p. 712 (type, *P. gangelica* Peters, orthotypic).

1862. *Parasilurus* Bleeker, *Ver. Akad. Amsterdam*, **14**, p. 392 (type *Silurus japonicus* Temminck & Schlegel. orthotypic).

1905. *Apodoglanis* Fowler, *Proc. Acad. nat. Sci. Philad.*, p. 463 (type *A. furnessi* Fowler, orthotypic).

1933. *Herklotsella* Herre, *Hongkong Nat.*, **4**, p. 179 (type *H. anomala* Herre, orthotypic).

Body elongate, compressed; dorsal profile nearly horizontal. Head depressed, covered with skin. Snout depressed. Eyes subcutaneous, lateral, above angle of mouth, in the anterior half of head. Nostrils remote from each other. Barbels 3 pairs or 2 pairs (in some adults). Mouth transverse, upper jaw longer. Teeth cardiform or villiform in jaws; vomerine band interrupted or uninterrupted; palate edentulous. Gill openings wide; gill membranes free from isthmus, deeply notched. A very short spineless dorsal; no adipose dorsal. Pectorals with a moderately strong entire spine. Pelvics with 8—10 rays, behind dorsal origin. Anal very long, slightly continuous with caudal or separated from caudal by a narrow notch. Caudal rounded or cut square. Lateral line. Skin smooth. Air bladder not enclosed in bone. Branchiostegals 12—15.

Distribution.—India, Pakistan, Burma, Malaya, Thailand, Cambodia, Hainan, Fukien, Hong Kong.

The genus **Silurus** is represented by three species in the Indian region.

Key to species and subspecies of genus **Silurus** Linnaeus

1. Anal with 70—78 rays, continuous with caudal; vomerine band of teeth uninterrupted. . . *S. gangetica*
2. Anal with 58—64 rays, close together with caudal, with or without separating notch; vomerine band of teeth interrupted or uninterrupted 3
3. Anal with 58—62 rays ; pectorals with 10 branched rays, not reaching pelvics; pelvics with 8 rays, 3·0 in head; vomerine band of teeth interrupted; maxillary barbels short, not extending to pelvics; anal and caudal separate from each other by notch . *S. cochinchinensis wynaadensis*
4. Anal with 62—64 rays; pectorals with 11—14 branched rays, reaching beyond pelvics; pelvics with 10 rays, 2·6 in head; vomerine band of teeth uninterrupted or interrupted ; maxillary barbels long extending to pelvics or anal ; anal and caudal close together, without a separating notch. *S. cochinchinensis cochinchinensis*

13. **Silurus cochinchinensis cochinchinensis** Valenciennes

(Text-fig. 39)

1839. *Silurus cochinchinensis* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 352 (type locality : Cochinchina).

1860. *Silurichthys berdmorei* Blyth. *J. As. Soc. Bengal*, **29**, p. 156 (type locality : Tenasserim, Bengal).

1864. *Silurus cochinchinensis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 34.

1877. *Silurus cochinchinensis* Day, *Fish. India*, p. 481, pl. 113, fig. 2.

1889. *Silurus cochinchinensis* Day, *Fauna Brit. India*, Fish., **1**, p. 120 (Hill ranges above Akyab, Tenasserim, Cochin-China).

1931. *Parasilurus cochinchinensis* Chu, *Biol Bull. St. John's Univ.*, No. 1, p. 75 (Hainan; Fukine).

1933. *Herklotsella anomala* Herre, *Hongkong Nat.*, **4**, p. 179 (type locality : Hongkong).

1933. *Silurus cochinchinensis* Mukerji, *J. Bombay nat. Hist. Soc.*, **36**, p. 817 (tributory streams of the Mali Hka river in the Myitkyina Dt., Upper Burma).

1936. *Silurus cochinchinensis* Hora, *Rec. Indian Mus.*, **38**, p. 356.

1937. *Parasilurus bokorensis* Pellegrin & Chevey, *Bull. de la Soc. Zool. France*, **72**, p. 315 (type locality : Bokor, Cambodia).

1938. *Silurus cochinchinensis* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, p. 84, text-fig. 80 (Western Duars).

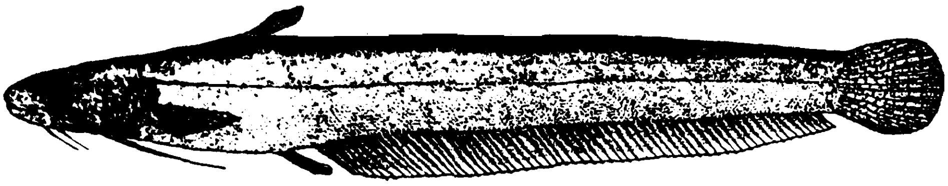
1941. *Silurus cochinchinensis* Hora & Gupta, *J. roy. As. Soc. Bengal, Sci.*, **6**, No. 2, 79 (Kalimpong Duars and Siliguri, Terai).

1941. *Silurus cochinchinensis* Bhimachar & Rao, *J. Mysore Univ., Sec. B. Sci.*, **1**, pt. 16, p. 147 (Shallow pit in hill stream near Muttodi, Jagger Valley, Kadur Dt., Mysore).

1941. *Silurus cochinchinensis* Hora & Gupta, *Bull. Raffl. Mus., Singapore*, No. 17, p. 18 (Kedah, Malaya).

1945. *Parasilurus cochinchinensis* Smith, *U. S. nat. Mus. Bull.*, No. 188, p. 333 (In a waterfall stream on Kao Chong, near Trang, in Peninsular Thailand).

1952. *Silurus cochinchinensis* Haig, *Rec. Indian Mus.*, **48**, p. 99.



TEXT-FIG. 39.—*Silurus cochinchinensis cochinchinensis* V. (After F. Day)

Vernacular name.—BURMA : *Taung-nga-nu-than*; *Hkaram.*

B. 14—15; D. 4; P. 1/11; V 10; A. 62-64 (2/60—62); C. 17.

Body elongate, compressed; dorsal profile nearly horizontal. Head depressed, covered with skin, width equal to its length behind nostrils, 6·0—6·5; depth 6·5—7·4 in total length (5·2—5·7 and 6·1—7 1 in standard length). Snout in 3·0 in head. Eyes small, subcutaneous, above the angle of mouth, in the anterior half of head, 9·0 in head, 3·0 in snout. Mouth transverse, upper jaw longer. Anterior nostrils tubular, wide-set, posterior before eye. Maxillary barbels twice the length of head, extending to pelvics, the mandibulars shorter than head. Teeth short, in band in jaws; vomerine teeth in 2 oval patches, separated by a smooth interspace or in a continuous band. Dorsal short, without spine, in the anterior third of standard length, half snout length before pelvic origin; the distance between snout end and dorsal origin 2·6 in distance between dorsal origin and caudal base. Pectorals with short terminations, reaching slightly beyond pelvics, 1·3 in head, with a short strong, scarcely serrated spine. Pelvics 2·6 in head, extending beyond anal origin, 1/2 snout length behind dorsal origin. Anal and caudal close together without separate notch; base 1·6 in standard length. Caudal cut square or round, 1·5 in head, 9·0—9·7 in total length, close together with anal but separate from it. Lateral line.

Skin smooth. Leaden, purplish below; covered all over with minute black points; caudal sometimes yellow.

It attains 160 mm. in length; in freshwater.

Distribution.—India : Mysore, Duars and Terai of N. Bengal. Burma : Akyab, Tenasserim, Myitkyina Dt.—Malaya, Thailand, Cambodia, Hainan, Fukien, Hongkong; in the latitudinal and longitudinal range of 12°6′—26°42′N., 76°—99°3′ E. in the Indian region and 12°—22°12′N., 99°50′—114°12′E. beyond Indian region.

14. **Silurus cochinchinensis wynaadensis** Day

(Text-fig. 40)

1873. *Silurus wynaadensis* Day, *Proc. zool. Soc. Lond.*, p. 237 (type locality : Wynaad; type in the Zoological Survey of India).

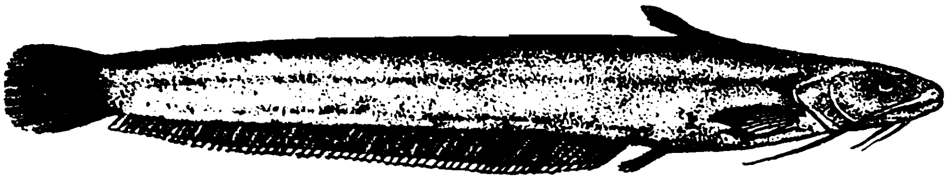
1877. *Silurus wynaadensis* Day, *Fish. India,* p. 480, pl. 111, fig. 6.

1889. *Silurus wynaadensis* Day, *Fauna Brit. India*, Fish., **1**, p. 119, fig. 50 (Wynaad, in a stream about 3000 ft. above the level of the sea).

1936. *Silurus wynaadensis* Hora, *Rec. Indian Mus.*, **38**, pp. 352, 356.

1952. *Silurus cochinchinensis* Haig (*partim*), *Rec. Indian. Mus.*, **48**, p. 99.

1955. *Silurus berdmorei wynaadensis* Rajan, *J. Bombay nat. Hist. Soc.*, **53**, p. 45 (the Bhavani R.).



TEXT-FIG. 40.—*Silurus cochinchinensis wynaadensis* Day (After F. Day)

B. 13—15; D. 5; P. 1/10; V. 8; A. 58—62 (2/58—60); C. 19.

Body elongate, compressed; dorsal profile nearly horizontal. Head depressed, covered with skin, width equal to its length, behind nostrils, 6·0—7·0; depth 8·0—8·5 in total length (5·7—6·7 and 7·2 in standard length). Snout 3 1 in head. Eyes subcutaneous, above the angle of mouth, 8·0 in head, 2·5—3·0 in snout, 5·0 in interorbital. Mouth transverse, upper jaw longer; gape equal to the postorbital part of head. Anterior nostrils tubular, wide-set, the posterior before eyes. Maxillary barbels extending slightly beyond middle of pectorals, outer and inner mandibulars to the pectoral base. In adult the outer mandibulars get absorbed. A row of large open pores along lower jaw and the cheeks. Teeth short, in band in jaws; 2 oval patches on vomer divided by short interspace. Dorsal short, without spine, in the anterior third of standard length; the distance between sonout end and dorsal origin 2·3 in the distance between dorsal origin and caudal base; origin an eye diameter before pelvics. Pectorals with soft terminations, 1·7 in head, their ends about a snout length away from pelvics, with a short strong spine. Pelvics 3.0 in head, extending to anal origin, an eye diameter behind dorsal origin. Anal long, 1·7 in standard length, with a notch between it and caudal. Caudal rounded, 1·5 in head, 9·0—10·5 in total length, with a notch between it and last anal ray. Lateral line.

Skin smooth. Leaden becoming purplish below, covered all over with small black points, after a dark finger mark on shoulder.

It attains 305 mm. in length; in freshwater.

Distribution.—India : Wynaad, the Bhavani river, Western Ghats.

369. **Silurus gangetica** (Peters)

1861. *Pterocryptis gangetica* Peters, *Monatsb. K. preuss. Akad. Wiss. Berlin*, p. 712 (type locality : Assam or the Eastern Himalayas where Westermann collected the specimens).

1864. *Silurus afghana* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 34 (type locality : Afghanistan as Griffith's collection were from Afghanistan, but as Day observes some Khasi hill specimens were mixed up with the Afghan collections so there is error in the exact type locality which should be Khasi Hills, Assam).

1864. *Cryptopterus gangeticus* Günther, *Cat. Fish. Brit. Mus.* **5**, p. 44.

1873. *Silurus dukai* Day, *Proc. zool. Soc. Lond.*, p. 239 (type locality: Darjeeling).

1877. *Callichrous gangeticus* Day, *Fish. India*, p. 476.

1877. *Silurus afghana*, Day, *Fish. India*, p. 481, pl. 112, fig. 1.

1889. *Silurus afghana* Day, *Fauna Brit. India*, Fish., **1**, p. 119 (the Himalayas : Darjeeling).

B. 12 ; D. 2; P. 1/13-14, V. 1/9; A. 70—78; C. 15—19.

Body elongate, compressed; dorsal profile nearly horizontal. Head broad, depressed, covered with skin, 6·0—6·5; depth 9·0—12·0 in total length (5·1—5·4 and 8·5—10·7 in standard length). Snout 2·0 in head. Eyes small, subcutaneous, behind the angle of mouth, in the anterior half of head; interorbital more than 1/2 the length of head. Mouth transverse, upper jaw slightly longer. Anterior nostrils tubular, wide-set, posterior before anterior border of eye. Maxillary barbels extending nearly to base of pelvics, mandibulars equal to head. A single row of six widely separated open glands under the mandible. Teeth short, in broad band in jaws; a continuous horse-shoe-shaped band on vomer. Dorsal very short, rudimentary, in the anterior third of standard length; origin 3/4 snout length, before pelvic origin; the distance between snout end and dorsal origin, 3·0 in distance between dorsal origin and caudal base. Pectorals with soft terminations, 1·5 in head, reaching pelvics, as long as head behind the eyes, rounded, with a moderately strong entire spine. Pelvics 2·9 in head; origin 3/4 snout length behind dorsal origin, with a very little interspace between it and anal origin. Anal long, 1·5 in standard length. Caudal round, continuous or slightly continuous with anal and with no interspace, 1·5—2·0 in head, 9·0—12·0 in total length. Lateral line.

Skin smooth. Uniform, purplish—black or brown.

It attains 183 mm. in length; in freshwater.

Distribution.—India : Darjeeling, Khasi Hills, Assam. Bangladesh.

155. Genus **Wallago** Bleeker

1851. *Wallago* Bleeker, *Nat. Tijds. Ned. Ind.*, **2**, p. 198 (type, *Silurus mülleri* Blkr.=*Silurus attu* Bl. Schn).

1938. *Wallagonia* Myers, *Copeia*, No. 2, p. 98 (type, *Wallago leeri* Blkr., orthotypic).

Body elongate, compressed. Head broad, covered with soft skin. Snout depressed, slightly produced. Cleft of mouth oblique, extending to orbit or beyond orbit. Nostrils wide apart, the anterior tubulated, posterior small, normal. Eyes above level of the angle of mouth, orbital margins free. Barbels 4. Teeth numerous, depressible cardiform in jaws, an oblique vomerine patch on either side; palate edentulous. A short rayed dorsal without spine. Gill openings wide; gill membranes free from each other and from isthmus, deeply notched above or slightly before pelvics: no adipose dorsal. Pectorals with a spine. Pelvics with 8-11 rays. Anal long, ending near caudal and non-confluent with it. Caudal forked, with rounded or pointed lobes. Lateral line. Auxiliary pore if present, minute. Air bladder heart-shaped, in the abdomen and attached to second, third and fourth vertebrae. Branchiostegals 15-21. Skin smooth.

Distribution.—India, Pakistan, Burma, Sri Lanka, Yunnan, Thailand, Java, Sumatra.

The genus **Wallago** is represented by a single species in the Indian region.

370. **Wallago attu** Schneider
(Text. fig. 41)

1801. *Silurus attu* Schneider, *Syst. Ichth. Bloch*, p. 378, pl. 75 (type locality : Malabar).

1822. *Silurus boalis* Hamilton, *Fish. Ganges*, p. 154, pl. 29, fig. 49 (type locality : Gangetic provinces, in ponds and rivers).

1838. *Schilbe boalis* Sykes, *Trans. zool. Soc.* **2**, p. 368, pl. 64, fig. 2.

1839. *Callichrous macrostomus* Swainson, *Nat. Hist. Animal.*, **2**, p. 306 (type locality : not given).

1839. *Silurus wallago* Valenciennes, *Hist. nat. Poiss.*, **14**, p. 354 (type locality : Bengal).

1846. *Silurus mülleri* Bleeker, *Nat. Tijds. Ned. Ind.*, p. 198 (type locality : Batavia).

1849. *Silurus wallago* Jerdon, *Mad. J. Lit. Sci.*, **15**, p. 333 (in rivers and tanks throughout all the South of India).

1853. *Wallago russellii* Bleeker, *Verh. Bat. Gen.*, **24**, p. 108 (type locality : Calcutta; Batavia).

1862. *Wallago russellii* Bleeker, *Atl. Ichth*, **2**, p. 79, pl. 86, fig. 1.

1864. *Wallago attu* Gunther, *Cat. Fish. Brit. Mus.*, **5**, p. 36.

1877. *Wallago attu* Day, *Fish. India*, p. 479, pl. 111, fig. 4 (attains at least 6 ft. in length).

1889. *Wallago attu* Day, *Fauna Brit. India*, Fish., **1**, p. 126, fig. 54.

1890. *Wallago attu* Vinciguerra, *Pesci di Birmania*, p. 28 (Rangoon, Mandalay, Bhamo).

1909. *Wallago attu* Jenkins, *Rec. Indian Mus.*, **3**, p. 287 (Giridih, Hazaribagh).

1910. *Wallago attu* Jenkins, *Rec. Indian Mus.*, **5**, p. 140 (Rajmahal).

1911. *Wallago attu* Chaudhuri, *Rec. Indian Mus.*, **6**, p. 24 (Yunnan).

1913. *Wallago attu* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 201 (Java : Sumatra).

1916. *Wallago attu* Raj, *Rec. Indian Mus.*, **12**, p. 263 (Madras).

1929. *Wallago attu* Prashad & Mukerji, *Rec. Indian Mus.*, **31**, p. 175 (Indawgyi Lake).

1931. *Wallago attu* Chu, *Biol. Bull. St. John's Univ.*, No. 1, p. 76 (Western Yunnan).

1932. *Wallago attu* Deraniyagala, *Ceylon J. Sci.*, (*B*), **16**, p. 275, pl. 4 (Ceylon).

1936. *Wallago attu* Suvatti *Index' Fish. Siam.*, p. 69 (Menam, Bangkok).

1936. *Wallago attu* D'Abrue, *Rec. Nagpur Mus.*, **9**, p. 33 (M. P. and Maharashtra).

1938. *Wallago attu* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** (1937), art. No. 1, p. 84 (Konai and Bani rivers, Northern Bengal).

1938. *Wallago attu* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 23 (Deolali).

1939. *Wallagonia attu* Hora, *J. Bombay nat. Hist. Soc.*, **41**, p. 64.

1941. *Wallagonia attu* Hora & Law, *Rec. Indian Mus.*, **43**, p. 238 (Travancore).

1941. *Wallago attu* Sen, *J. roy. As. Soc. Bengal, Sci.*, **7**, No. 1, p. 9 (Salt Lakes near Calcutta).

1942. *Wallagonia attu* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **43**, No. 2, p. 221 (Poona).

1945. *Wallagonia attu* Smith, *U.S. nat. Mus. Bull.*, No. 188, p. 332 (Siam).

1946. *Wallagonia attu* Setna & Kulkarni, *J. Bombay nat. Hist. Soc.*, **46**, No. 1, p. 128 (Ahmedabad).

1947. *Wallagonia attu* Chauhan, *Rec. Indian Mus.*, **45**, p. 270 (Patna State, Orissa).

1948. *Wallagonia attu* Chacko & Kuriyan, *Proc. Indian Acad. Sci.*, **28**, p. 171 (Tungabhadra, Mysore; Kottamotta, Kurnool, Madras).

1952. *Wallago attu* Chacko, *Contr. Freshwater Fish. Biol. Stn. Madras*, pp. 2, 5, 8, 9 (Madras State).

1952. *Wallago attu* Chacko & George, *Contr. Freshwater Fish. Biol. Stn. Madras*, No. 1, p. 1 (Rajahmundry, Andhra State).

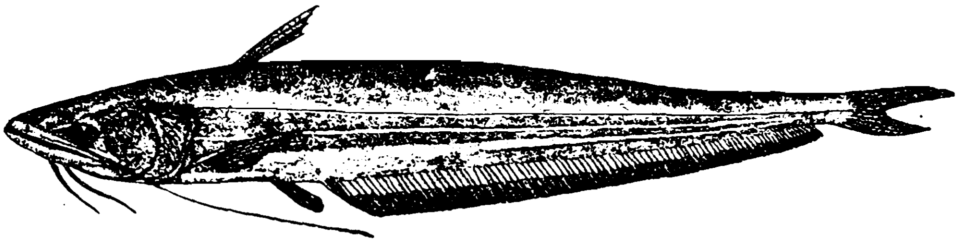
1952. *Wallago attu* Job, David & Motwani, *J. As. Soc. Bengal, Sci.*, **18**, No. 2, p. 157 (the Damodar).

1955. *Wallago attu* Job, David & Das, *Indian J. Fish.*, **2**, p. 13 (Hirakud Dam).

1955. *Wallago attu* Chacko & Srinivasan, *Contr. Freshwater Fish. Biol. Stn. Madras*, No. 13, p. 3 (Godavari, Madras State).

1955. *Wallago attu* Munro, *Mar. Freshwater Fish. Ceylon*, p. 49 (in rivers and tanks, Ceylon).

Vernacular names.—INDIA : ***Sareng, Barali,*** Assam; ***Boyali, Boal,*** Bengal; ***Boyari,*** Bhagalpur; ***Baloo,*** Deolali, ***Barhari***; Gorakhpur; ***Boallee,*** Hindi; ***Shivada, Pari, Purram, Warshoorah,*** Maharashtra; ***Auttu-vahlay,*** Malayalam; ***Paran, Boyari,*** M.P., ***Ballia, Boabe*** Oriya ***Boyari,*** Patna; ***Pahree,*** Poona; ***Mullay,*** Punjab; ***Valai Athi Yalai, Wallah, Tele,*** Tamil; ***Walagah,*** Telugu; Standardised name : ***Bowli, Padhin,*** BANGLADESH : ***Boyali, Keyali,*** Dinajpur; ***Poil,*** Chittagong; ***Mulley, Poikee, Mulla, Pi-i-kee, Pada. Jer-i-kee.*** BURMA : ***Ngabat.*** SRI LANKA : ***Maha vallaya, Vallaya,*** Singhalese.



TEXT-FIG. 41.—*Wallago attu* (Schn.) (After F. Day)

B.18—21; D.1/4; P.1/13—15; V. 8—10; A. 86—93 (4/82—89); C.17; Vert. 13/56.

Body elongate, compressed. Head broad, width slightly less than its length, equalling half its length, 5 ·0—5 ·5; depth 6 ·5—7 ·5 in the total length (4 ·2—4 ·7 and 5 ·0—7 ·0 in standard length). Snout depressed, slightly produced, 2 ·7—3·0 in head. Eyes small, with free orbital edge, entirely above mouth opening, 6 ·5—10 in head, 2 ·0 in snout, 2 ·5—3 ·3 in interorbital. Cleft of mouth wide, extending an eye diameter behind orbit, lower jaw slightly longer. Maxillary barbels extending to pelvics beyond anal origin, mandibulars as long as snout. Teeth pointed, depressible, in broad bands in jaws, posterior rows increasing in size; vomerine teeth similar and in two oblique oval patches, no palatine teeth. A rayed dorsal without spine, short, in the anterior third of body, height more than postorbital part of head; origin half to one eye diameter before pelvic origin. Pectorals 1 ·5 in head, reaching beyond pelvic origin, with a weak spine, finely serrated or entire internally, as long as post-orbital part of head. Pelvics 2 ·6 in head, reaching anal origin; origin half to one eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal very long, 1 ·9—2 ·1 in total length; origin 2 eye diameters behind pelvic origin, non-confluent with caudal. Caudal forked, with pointed or rounded lobes, 1 ·8 in head, 8 ·5—

9·0 in total length, upper lobe longer; least height of caudal peduncle equalling its length. Lateral line straight. Gill rakers 21, short.

Darker above lighter below; fins sometimes covered with fine dots.

It attains 1830 mm. in length; in fresh and tidal waters; predatory.

Distribution.—Throughout India, Pakistan, Burma, Sri Lanka, Yunnan, (Kunming), Thailand, Java, Sumatra, in the latitudinal and longitudinal range of 8°—31° 37′ N; 64°3′—96°23′ E. in the Indian region and 25° 2′ N.—6°12′S, 100°30′—106°30′E. beyond Indian region.

LVIII. Family SISORIDAE

Body short or elongate, compressed or subterete or subcylindrical, compressed pelvics or ventrally flattened up to pelvics or depressed with a long tapering tail. Heed greatly or moderately depressed, conical or broad, covered with skin or osseous or rugose. Eyes large or moderate or small, superior or dorso-lateral, subcutaneous. Nostrils close together or slightly wide apart, anterior separated from the posterior by a small lobe or nasal barbel; 6 pairs of barbel-like processess or 4 pairs of barbels. Mouth wide or small, inferior, crescentic or transverse, upper jaw the longer. Teeth absentor villiform in jaws; vomerine teeth present or absent; palatine teeth absent. Gill openings wide extending ventrally, or narrow restricted to below-pectoral base; gill membranes confluent or free with isthmus. Median longitudinal groove on head prominent or not prominent Occipital process reaching or not reaching basal bone of dorsal. Humero-cubital and scupular processes poorly developed or prominent. Adhesive thoracic apparatus present or absent. A short rayed dorsal with a spine; an adipose dorsal. Pectorals low or high, horizontal or lateral with strong flattened spine or its first ray soft and weak with pointed cartilaginous rays along its inter margin. Pelvics horizontal, with its first ray bearing or not bearing pointed cartilaginous rays along its inner margin. A short anal, caudal forked or lunate or cut square, upper rays elongated or normal or the uppermost elongated more than half the body length.

Lateral line. Skin smooth or granulated or tuberculated. Air bladder partially or wholly enclosed in bone. Branchiostegals 4—12.

Pliocene to recent.

The family SISORIDAE is comprised of three subfamilies in the Indian region.

Key to subfamilies of family SISORIDAE

1. A series of osseous plates from the dorsal fin to root of caudal; uppermost caudal ray much elongated, more than half length of body; no teeth on jaws, vomer and palate; adipose dorsal rarely in the form of spines.	*SISORINAE*
2. No series of osseous plates from dorsal fin to root of caudal; uppermost caudal ray not much elongated and not more half length of body; teeth in jaws, on vomer present or absent, none on palate; normal adipose dorsal ..	3
3. First ray of paired fins soft and weak with soft internal pointed cartilaginous rays along its anterior margin; a thoracic adhesive apparatus of transverse folds of skin present or absent; no teeth on vomer and palate; teeth in jaws only ..	*GLYPTOSTERNINAE*
4. First ray of paired fins strong, without soft, internal, pointed cartilaginous rays along its anterior margin; thoracic adhesive apparatus of longitudinal plaits of skin present or absent; teeth in jaws; vomerine teeth present or absent; palatine teeth absent	*BAGARINAE*

XVII. Subfamily *BAGARINAE*

First ray of paired fins devoid of soft, internal, pointed cartilaginous rays along its anterior margin. A thoracic adhesive apparatus of longitudinal plaits of skin present or absent. Teeth in jaws; vomerine teeth present or absent; palatine teeth absent. No series of bony plates from dorsal fin to root of caudal. Uppermost caudal ray normal, or when elongated less than half the length of body.

The subfamily *BAGARINAE* is represented by ten genera in the Indian region.

Key to genera of subfamily BAGARINAE

1.	Pectoral spine strongly indented on outer margin	3
2.	Pectoral spine not strongly indented on outer margin	9
3.	Indentations of outer edge of pectoral spine in the form of divergent spines	**Erethistes**
4.	Intentations of outer edge of pectoral spine not in the form of divergent spines	5
5.	Denticles on the outer edge of pectoral spine directed towards its base in the proximal half and towards the tip in the distal half	**Erethistoides**
6.	Denticles on the outer edge of pectoral spine directed towards its tip	7
7.	An elongated thoracic adhesive apparatus extending below to pelvics ; body elongated	**Conta**
8.	No thoracic adhesive apparatus; body rather stumpy	**Hara**
9.	Head depressed; paired fins horizontal, on same level	11
10.	Head not depressed; paired fins not horizontal, not on same level .	17
11.	Cubito-humeral and scapular processes prominent; thoracic adhesive apparatus well developed or poorly developed	13
12.	Cubito-humeral and scapular processes not prominent; a well developed thoracic, adhesive apparatus present or absent	15

13. An elongated, well developed, thoracic adhesive apparatus extending below to pelvics **Pseudolaguvia,gen.** nov.

14. A poorly developed thoracic adhesive apparatus not extending below to pelvics **Laguvia**

15. A well developed thoacic adhesive apparatus **Glyptothorax**

16. Thoracic adhesive apparatus absent **Bagarius**

17. Open pores along lower jaw and edges of gill cover ; bases of maxillary barbels not osseous or stiff. **Batasio**

18. No open pores along lower jaw and gill cover ; bases of maxillary barbels osseous or stiff **Gagata**

156. Genus **Bagarius** Bleeker

1853. *Bagarius* Bleeker, *Verh. Bat. Gen.*, **25**, p. 121 (type, *Pimelodus bagarius* Ham., tautotypic).

Body elongate, flattened ventrally to pelvics. Head naked, osseous, rugose depressed. Snout depressed, broadly conical, overhanging mouth. Eyes small, subcutaneous, superior. Nostrils close together, the posterior with a nasal barbel. 4 pairs of barbels. Mouth inferior, crescentic; upper jaw the longer. Teeth unequal, in crescentic band in jaws; palate edentulous. Gill opening wide; gill membranes free or narrowly attached to isthmus. No thoracic adhesive apparatus. Occipital process reaching basal bone of dorsal. Rayed dorsal with a spine, an adipose dorsal. Pectorals low, lateral, with strong spine serrated internally. Pelvics horizontal, with 6 rays. Anal short. Caudal deeply forked, upper the longer. Lateral line. Skin scabrous. A small air bladder with 2 lateral chambers enclosed in bone. An auxiliary pore. Branchiostegals 12.

Distribution.—India, Pakistan, Burma, Tonkin, Thailand, Indonesia.

371. **Bagarius bagarius** (Hamilton)

(Text-fig. 42)

1822. *Pimelodus bagarius* Hamilton, *Fish. Ganges*, pp. 186, 379, pl. 7, fig. 62 (type locality : Ganges river and its tributaries).

1839. *Pachypterus luridus* Swainson, *Nat. Hist. Animal.*, **2**, p. 306.

1840. *Pimelodus bagarius* Valenciennes, *Hist. nat. Poiss.*, **15**, P. 146, pl. 433.

1841. *Bagrus yarrellii* Sykes, *Trans. zool. Soc. Lond.*, **2**, p. 370 (type locality : Mota Mola river at Poona).

1847. *Pimelodus bagarius* Bleeker, *Verh. Bat. Gen.*, **21**, 1, p. 10.

1849. *Pimelodus yarrellii* Jerdon, *Madras J. Lit. Sci.*, **15**, p. 141.

1853. *Bagarius buchanani* Bleeker, *Verh. Bat. Gen.*, **25**, p. 121.

1864. *Bagarius yarrellii* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 183 (Dekkan; Madras & Ganges; Java).

1877. *Bagarius yarrellii* Day, *Fish. India*, p. 495, pl. 115, fig. 3 (large rivers of India and Java).

1889. *Bagarius yarrellii* Day, *Fauna Brit. India*, Fish., **1**, p. 194, fig. 71.

1890. *Bagarius yarrellii* Vinciguerra, *Ann. Mus. Civ. Stor. nat. Geneva*, (2) **9**, p. 243.

1890. *Bagarius yarrellii* Vinciguerra, *Pesci di Birmania*, pp. 28, 115 (Mandalay; Bhamo; Meetan).

1904. *Bagarius nieuwenhuisii* Popta, *Notes Leyden Mus.*, **24**, p. 190 (type locality : North Borneo).

1913. *Bagarius bagarius* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 270, fig. 105 (Java; Sumatra; Borneo).

1929. *Bagarius bagarius* Prashad & Mukerji, *Rec. Indian Mus.*, **31**, p. 181 (Kamaing, Myitkyina Dt.).

1936. *Bagarius bagarius* Suvatti, *Index Fish. Siam*, p. 80 (Bangkok Chiengamai : Pattani : Maenam Nan).

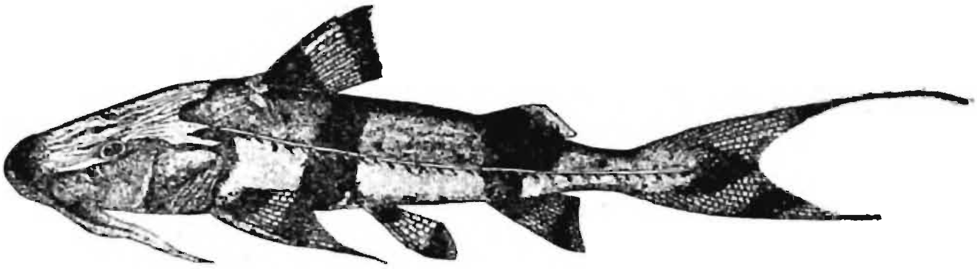
1937. *Bagarius bagarius* Fowler, *Proc. Acad. nat. Sci. Philad.*, **89**, p. 144, figs. 38-43 (Kemrat, Siam).

1949. *Bagarius bagarius* Hora, *J. zool. Soc. India*, **1**, p. 2 (Rihand river, near Pipri dam site).

1952. *Bagrius bagarius* Job, David & Motwani, *J. As. Soc. Bengal, Sci.*, **18**, p. 170 (Maithon section, Barakar river).

1955. *Bagarius bagarius* Job, David & Das, *Indian J. Fish.*, **2**, p. 35 (Hirakud region).

Vernacular names.—INDIA : *Goreah, Bagh Machch,* Assam; *Bagh-ari, Bagh-ar,* Bengal; *Vaghair, Baghar,* Bihar; *Gaunch, Boonch,* Hindi, U.P.; *Sah-lun,* Oriya; *Kheerd, Mollandah, Gawch,* Poona; *Rahti-jellah,* Telegu. BANGLADESH : *Bagh ari,* Dinajpur. BURMA : *Nga-maun-ma.*



TEXT-FIG. 42.—*Bagarius bagarius* (Ham.) (After F. Day)

B. 12 : D. 1/6/0; P. 1/12; V 1/5; A. 12—15 (3/9—12); C. 17.

Body elongate, flattened ventrally to the pelvics. Head naked, osseous, rugose in regular bands and lines, depressed, height 1·6—2·9, width 1·2—1·3 in its length, 4·5; depth 7·4 in total length (3·4 and 5·1 in standard length). Snout 2·3 in head. Eyes small, subcutaneous, superior, in the posterior half of head, 7·7—11·2 in head, 3·3—6·4 in snout, 2·0—3·5 in interorbital. Mouth inferior, crescentic, upper jaw longer; gape of mouth 4·7 of the length of head. Maxillary barbels broad based, extending beyond pectoral base, outer and inner mandibulars very short, the nasals smaller than eye. Nostrils close together, separated by a membranous fold, produced into a short nasal barbel. Teeth sharp, unequal in size, in crescentic band in jaws; the band in lower jaw narrow, with a series of strong curved teeth; palate edentulous. No thoracic adhesive apparatus. Gill openings wide; extending to the ventral surface; gill membranes anteriorly united, deeply emarginate, free from isthmus. Rayed dorsal 1·5 in head, with a smooth spine having an elongated softer termination of varying length, 1·5—2·3 in head; origin nearer to adipose dorsal than to snout end; adipose dorsal base equal to rayed dorsal base, extending opposite to last anal ray; interdorsal 1·7 times adipose dorsal base. Pectorals low, extending upto anal base, 1·2 in head, with a strong spine, 1·7—2·0 in head, serrated internally and provided with a soft prolongation. Pelvics 2·0 in head, not reaching anal; origin an eye diameter behind last anal ray, nearer to anal origin than to pectoral base. Anal 2·0 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, both lobes filamentous, upper lobe the longer, 1·4 times head, 3·2 in total length; least height of caudal peduncle 3·1—3·8 in its length. Lateral line.

Skin scabrous over summit of head and on body. Grey or yellowish with large irregular, brown or black markings and cross bands; fins black based and with dark cross band.

It attains 1828 mm. in length; in fresh and tidal waters.

Distribution.—Large rivers of India, Pakistan and Burma.—Tonkin, Thailand, Indonesia; in the latitudinal and longitudinal range of 13°4′—28°38′N., 74°—97° 17′ E. in the Indian region and 20°N.—6°12′S., 110°30′—113°30′E. beyond Indian region.

157. Genus **Batasio** Blyth

1860. *Batasio* Blyth, *J. As. Soc. Bengal,* **29,** p. 149 (type, *B. buchanani* Blyth=*Pimelodus batasio* Ham., orthotypic).

1921. *Macronoides* Hora, *Rec. Indian Mus.*, **22,** p. 179. (type, *Macrones affinis* Blyth=*Pimelodus tengana* Ham., orthotypic).

Body moderately elongate, compressed, flattened ventrally to pelvics. Head conical, broadly or bluntly pointed, covered with skin. Snout conical, broadly or bluntly pointed, over hanging mouth. Eyes moderate, subcutaneous, dorso-lateral. Nostrils wide aprat, posterior with a nasal barbel. Mouth inferior, crescentic; lips thick fleshy, fimbriated or not fimbriated. Behind lower lip 4—5 oval, slit-like apertures on each side, followed by 4—6 pores running obliquely between outer mandibular base to gill opening or between angles of mouth and gill opening with or without additional pores between 4 pairs of barbels, all shorter than head. Teeth small, villiform, in band in jaw, vomer and palatine teeth absent. Median longitudinal groove on head. Occipital process reaching or not reaching basal bone of dorsal. Gill openings wide; gill membrane notched, anteriorly confluent with isthmus. Humero-cubital process not well developed. A short rayed dorsal with spine strong or weak, smooth or serrated; an adipose dorsal. Pectorals above level of pelvics, with a strong spine, smooth externally serrated internally. Pelvics, horizontal, with 6 rays. Anal short. Caudal deeply forked. Lateral line. Skin smooth. Air bladder in 2 rounded portions enclosed in bone. Branchiostegals 6.

Distribution.—India, Burma, Perak, Thailand.

The genus **Batasio** is represented by three species in the Indian region.

Key to species of genus **Batasio** Blyth

1. Occipital process reaching basal bone of dorsal; no pores on snout below eye and free border of gill cover	
2. Occipital process not reaching basal bone of dorsal; pores on snout below eye and free border of gill cover	*B. travancoria*
3. Oblique vertical bands or spots on body; caudal lobes rounded	*B. tengana*
4. Longitudinal bands on body : caudal lobes pointed	*B. batasio*

372. **Batasio batasio** (Hamilton)

(Pl. IV, figs. 1—3)

1822. *Pimelodus batasio* Hamilton, *Fish. Ganges*, pp. 179, 377 (*nec.* pl. 23, fig. 6 which refers to *P. carcio* Ham., p. 181) (type locality: Tista river).

1864. *Macrones batasio* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 83 (Tista river).

1877. *Gagata batasio* Day, *Fish. India*, p. 493, pl. 99, fig. 5 (Hamilton's MS drawing reproduced).

1889. *Gagata batasio* Day, *Fauna Brit. India, Fish.*, **1**, p. 209.

1929. *Pimelodus batasio* Hora, *Mem. Indian Mus.*, p. **9**, pl. 22, fig. 3.

1938. *Batasio batasio* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, (1937), p. 47 (Tarai and Duars).

1941. *Batasio batasio* Hora & Law, *Rec. Indian Mus.*, **43**, p. 33, pl. 2, figs. 4, 5, 6.

Vernacular name.—INDIA : *Batasio*, Bengal.

B. 6; D. 2/7/0; P. 1/5-8; V. 1/5; A. 3-4/9-10; C. 17.

Body elongate, compressed, flattened ventrally to the pelvics. Head sharp, bluntly pointed, conical, height 1·3—1·7, width 1·4—2·3 in its length, 4·3—4·5; depth 4·5—5·1 in total length (3·6—3·9 and 3·7—4·4 in standard length). Snout pointed, 2·1—2·5 in head, projecting over the mouth. Eyes subcutaneous, dorsolateral, 2·6—3·3 in head, 1 1—1·5 in snout, 0·7—1·2 in interorbital. Nostrils slightly wide apart, the posterior ones with a nasal barbel. Mouth inferior, crescentic, horizontal; lips fleshy, distinctly fimbriated, continuous at angles of mouth; gape of mouth 2·4 in width of head. Lower labial fold interrupted in the middle. Behind lower lip 4, slit-like apertures opposite to bases of mandibular barbels, followed on each side by 4 pores running obliquely from the outer mandibular base to the gill opening. Maxillary barbels extending to midorbit, outer and inner mandibulars nearly equal to eye, the base of inner anterior to outer, the nasals smaller than eye. Teeth small, villiform, in broad continuous bands in jaws and vomer; median notch in the band of lower jaw. Median longitudinal groove on head narrow, of 2 fontanels separated by a bony ridge, reaching beyond the base of occipital process; occipital process 3·5 times as long as broad at its base, reaching basal bone of dorsal. Gill openings wide, extending to ventral surface; gill membrane notched anteriorly, isthmus narrow. Teeth villiform, small; in oval patch in jaws; lunate band in vomer. Rayed dorsal 1·3—1·5 in head, with a strong spine, smooth on both edges, nearer to adipose dorsal than to snout end; adipose dorsal base 1·8 times rayed dorsal base, extending opposite to last anal ray; interdorsal 3·3 in adipose dorsal base. Pectorals slightly above level of pelvics, 1·3—1·6 in head, not reaching pelvics, with a strong spine, smooth externally and strongly denticulated internally. Pelvics 1·6—2·0 in head, not reaching anal origin; origin 1/4 eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3——2·0 in head; origin below middle of adipose dorsal, nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes subequal, pointed, 1·3 in head; 5·5—5·8 in total length; least height of caudal peduncle 1·3—1·5 in its length. Lateral line.

Skin smooth. Laden above becoming yellow below with 2 dark lateral bands; a black spot below rayed dorsal base on lateral line.

It attains 101 mm. in length; in freshwater.

Distribution.—India: the Teesta river system and the streams of Terai and Duars, West Bengal.

373. **Batasio tengana** (Hamilton)

(Pl. IV, figs. 4—6)

1822. *Pimelodus tengana* Hamilton, *Fish. Ganges*, pp. 176, 377 pl. 39, fig. 58 (type locality: the Brahmaputra).

1860. *Batasio affinis* Blyth, *J. As. Soc. Bengal*, **29**, p. 150 (type locality : Tenasserim).

1864. *Macrones affinis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 83 (Tenasserim).

1864. *Macrones tengana* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 84 (the Brahmaputra).

1877. *Macrones blythii* Day, *Fish. India*, p. 445 (type locality; Tenasserim).

1877. *Gagata tengana* Day *Fish. India*, p. 493 (Brahmaputra, Assam).

1888. *Eiocassis fluviatilis* Day, *Fish. India, Suppl.*, p. 805 (type locality : the Anin, near, Weywoon, Wagroo, Tenasserim provinces).

1889. *Macrones blythii* Day, *Fauna Brit. India, Fish,*. **1**, p. 151.

1889. *Eiocassis fluviatilis* Day, *Fauna Brit. India*, Fish., **1**, p. 169.

1889. *Gagata tengana* Day, *Fauna Brit India*, Fish., **1**, p. 210.

1890. *Macrones dayi* Vinciguerra, *Ann. Mus. Civ. Stor. Nat. Genova*, (2) **9**, p. 230, pl. 7, fig. 3 (type locality : Meetan, Toungoo).

1913. *Macrones marianiensis* Chaudhuri, *Rec. Indian Mus.*, **8**, p. 253 , pl. 11, fig. 1, la, lb (type locality : a pond at Mariani).

1921. *Macrones* (*Macronoides*) *affinis* Hora, *Rec. Indian Mus.*, **22**, p. 180 (Amambi stream near Karam Lakai, Imphal).

1921. *Macrones* (*Macronoides*) *marianiensis* Hora, *Rec. Indian Mus.*, **22**, p. 736 (Sivoke river, Darjiling).

1938. *Leiocassis rama* Shaw & Shebbeare (*nec* Hamilton), *J. roy. As. Soc. Bengal, Sci.*, **3**, (1937), p. 90, text-fig. 88, pl. 3, fig. 4.

1941. *Batasio tengana* Hora & Law, *Rec. Indian Mus.*, 43, p. 136.

Vernacular names.—INDIA : *Nga-rang*, Manipur. BURMA : *Nbang Baw, Nga Hka, Shing gyang.*

B. 6; D. 2/7-8/0; P. 1/7-9; V. 1/5; A. 3-4/8-11; C. 16-18.

Body elongate, compressed, flattened ventrally to the pelvics. Head broadly pointed anteriorly, height 1·3—1·7, width 1·3—1·7 in its length, 4·4—4·6; depth 4·7 in total length (3·9 and 4·1 in standard length). Snout 2·8 in head. Eye subcutaneous, dorsolateral, in the middle of head, 2·5—3·4 in head, 0·8—1·4 in snout, 1·5 in interorbital. Nostrils slightly wide apart, the posterior ones with a nasal barbel. Mouth small, inferior, crescentic; lips fleshy, fimbriated, continuous at angles of mouth; gape of mouth 2·3 in width of head. Lower labial fold interrupted in the middle. Behind lower lip 5 slit-like oval apertures, followed on each side by 4 round pores situated obliquely between the base of outer mandibular barbel and the gill opening. Maxillary barbels half the length of head, the outer mandibulars 1·5 times eye diameter, the inner mandibulars equal to eye, the nasals 3/4 of eye diameter. Teeth villiform, in broad continuous band in jaws and vomer. Median longitudinal groove on head long, narrow of 2 fontanels separated by a ridge extending to base of occipital process; occipital process reaching the basal bone of dorsal. Gill openings wide, gill membranes deeply notched anteriorly. Rayed dorsal 1·1—1·4 in head, with a strong spine, smooth on both edges; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·5 times rayed dorsal base, extending opposite to last anal ray; interdorsal 3·5 in adipose dorsal base. Pectorals slightly above the level of pelvics, 1·0—1·5 in head, not reaching pelvics, with a strong flattened spine, smooth externally, strongly denticulated internally. Pelvics 1·3—1·7 in head, not reaching anal origin, extending beyond anal opening but not to urinogenital opening; origin behind the last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·2—1·8 in head; origin an eye diameter behind adipose dorsal origin , nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes pointed, lower lobe better developed, 1·2 in head, 5·2—5·5 in total length; least height of caudal peduncle 0·8—1·6 in its length. Lateral line.

Skin smooth. Olivaceous grey becoming lighter below; 5 oblique saddle-shaped cross bands on sides; raye dorsal cross banded; a broad black spot on nape.

It attains 90 mm. in length; in freshwater.

Distribution.—India* : Darjeeling Himalayan, the Brahmaputra, Imphal, Assam, Burma: Meetan, Tenasserim, Toungoo, Mergui.—Perak, Thailand; in the latitudinal and longitudinal range of 12°6′—27°3′N., 88°18′—99°3′E. in the Indian region and 4°—13°42′N., 100°30—101°E. beyond Indian region.

374. **Batasio travancoria** Hora & Law

(Pl. V, figs. 1—3)

1941. *Batasio travancoria* Hora & Law, *Rec. Indian Mus.*, 43, p. 40 pl. 2, figs 7—9(type locality : the Peruntenaruvi at Edakadathy; the Kolathupuzha, tributary of the Kallada; the Chittar at Palode; the Kallada, 4 miles east of Thenmalai, Travancore; type is in the Zoological Survey of India).

B. 6; D. 2/7/0; P. 1/7-9; V. 1/5; A. 3-4/9-11; C. 16-19.

Body elongate, compressed, flattened ventrally to the pelvics. Head with pores on dorsal surface, conical, rounded anteriorly, height 1·4—1·8, width 1·3—1·5 in its length, 4·8—5·0; depth 6·0—6·3 in total length (3·8—4·3 and 4·8—5·4 in standard length). Snout rounded, projecting over the mouth, 2·3—2·9 in head. Eyes subcutaneous, dorsolateral, 2·7—3·1 in head, 0·9—1·2 in snout, 0·6—1·0 in interorbital. Nostrils slightly wide apart, the posterior ones with a nasal barbel. Pores between nostrils, before eyes and along free borders of gill covers. Mouth small, inferior, lunate; lips fleshy crenulated, not fimbriated, pendulous, continuous at the angles of mouth; gape of mouth 3·0 in the width of head. Behind lower lip 5 large oval pores followed on each side by 6 pores situated obliquely between the angles of the mouth and gill cover. Maxillary barbels extending to anterior margin of eye, outer mandibulars equal to an eye diameter, the inner mandibulars about half an eye diameter, the nasals equal to an eye diameter. Teeth small, villiform, in band in jaws and vomer. Median longitudinal groove on head narrow, of 2 fontanels separated by a narrow ridge extending to base of occipital; occipital process sharply pointed posteriorly, separated from the

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*Tilak and Tandon [1970, *Res. Bull.* (n.s.) *Punjab Univ.*, 21, p. 505] record it from Punjab also.

basal bone of dorsal by a distance 3/4 eye diameter. Gill openings wide, gill membranes notched anteriorly. Rayed dorsal 1·2—1·3 in head, with a weak spine roughened along both the edges; adipose dorsal base 2·7 in rayed dorsal base, extending to about an eye diameter behind last anal ray; no interdorsal. Pectorals above level of pelvics, not reaching anal fin, 1·2—1·3 in head, with a moderately strong spine, smooth externally, denticulated internally. Pelvics horizontal, extending beyond anal opening to the urogenital papilla, not reaching anal fin, 1·4—1·7 in head; origin opposite to last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3—1·7 in head; origin nearly below middle of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes round, lower lobe better developed than the upper, 1·2 in head, 5·7—6·0 in total length; least height of caudal peduncle 1·0—1·2 in its length. Lateral line.

Skin smooth. Uniformly grey with narrow dark streak along the lateral line; all fins dusky.

It attains 97 mm. in length; in freshwater.

Distribution.—India : Streams of the Western Ghats, Kerala.

158. Genus **Gagata** Bleeker

1858. *Gagata* Bleeker, *Ichth. Archipel. Ind. Prodromus.*, **1**, 204 (type , *G. typus* Blkr. = *Pimelodus gagata* Ham., orthotypic).

1864. *Callomystax* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 218. (type, *C. gagata* (Ham.), orthotypic).

1877. *Nangra* Day*, *Fish. India*, p. 493, (type, *Pimelodus nangra* Ham., orthotypic).

Body moderately elongate, compressed, flattened ventrally to pelvics. Head broadly pointed, conical with sharp longitudinal ridges covered by skin. Snout broadly pointed or rounded, over hanging mouth. Eyes large or moderate, subcutaneous, dorsolateral. Nostrils wide apart or close together, the posterior with a nasal barbel. Mouth small or wide, inferior, crescentic or transverse; lips thin or thick, continuous at angles of mouth. 4 pairs of barbels, maxillary barbels with stiff basal portions.

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*Jayaram [1972, *J. zool. Soc. India*, 23(2): 171] resurrected *Nangra* from the synonymy of the genus *Gagata*.

Teeth viliform in jaws; palate edentulous. Median longitudinal groove on head. Occipital process reaching or not reaching basal bone of dorsal. Gill openings wide, extending to ventral surface; gill membrane confluent with isthmus. Cubito-humeral process developed or not well developed. A short rayed dorsal with a spine; an adipose dorsal. Pectorals horizontal, above level of pelvics, with a strong spine. Pelvics horizontal, with 6 rays. A short anal. Caudal deeply forked. Lateral line. Skin smooth. Air bladder in 2 rounded portions enclosed in bone. Branchiostegals 5—7.

Distribution.—India, Pakistan, Nepal, Burma.

The genus **Gagata** is represented by five species in the Indian region.

Key to species of genus **Gagata** Bleeker*

1. Median longitudinal groove on head reaching posterior border of eyes and followed by a small median oval fontanel; mandibular barbels close together in transverse row	*G. itchkea*
2. Median tongitudinal groove on head extending beyond orbit without a small median oval fontanel; mandibular barbels close together in transverse row or wide apart at different levels	3
3. Median longitudinal groove on head extending to end of occipital process; isthmus broad	*G. gagata*
4. Median longitudinal groove on head extending to base of occipital process ; isthmus narrow	5
5. Mandibular barbels close together in transverse row	*G. cenia*
6. Mandibular barbels wide apart at different levels	7
7. Nasal barbels as long as or longer than head ; snout pointed ; tip of occipital process pointed	*G. nangra*
8. Nasal barbels minute ; snout broadly rounded; tip of occipital process club-shaped	*G. viridescens*

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*Recently Tilak [1970, *Zool. Mededelingen*, 44(14):207] described a new species, *G. sexualis* from Bihar.

375. **Gagata cenia** (Hamilton)
(Pl. V, figs. 4, 5)

1822. *Pimelodus cenia* Hamilton, *Fish. Ganges*, pp. 174, 376, pl. 31, fig. 57 (type locality : northern parts of Bengal in rivers).

1877. *Gagata cenia* Day (*partim*), *Fish. India*, p. 492, pl. 115, figs. 4, 5.

1889. *Gagata cenia* Day (*partim*), *Fauna Brit. India, Fish.*, 1, 208.

1890. *Gagata cenia* Vinciguerra, *Ann. Mus. Civ. Stor. Nat. Geneva*, (2) 9, 121 (Rangoon, Mandalay, Bhamo).

1921. *Gagata cenia* Hora, *Rec. Indian Mus.*, 22, p. 182 (Imphal & Amambi streams).

1938. *Gagata cenia* Hora, *Rec. Indian Mus.*, 40, p. 180, fig. 6. (Morel river, Rajmahal hills, Santal Parganas).

1939. *Gagata cenia* Das, *Rec. Indian Mus.*, 41, p. 438 (Hazaribagh Dt.).

1941. *Gagata cenia* Hora & Law *Rec. Indian Mus.*, 43, p. 21, pl.1, figs. 5, 6.

Vernacular names.—INDIA : *Jungla*, Bengal; *Nga-rang*, Manipur BANGLADESH : *Jungla*. PAKISTAN : *Cenia*. BURMA : *Nga-nan-joung*.

B. 5—6; D. 2/6/0; P. 1/7—9; V 1/5; A. 2—3/10—12; C. 17—19.

Body elongate, flattened ventrally to the pelvics. Head covered with soft skin, rounded anteriorly, height 1·2——1·8, width 1·4—2·0 in its length, 4·6—5·4; depth 6·2—7·2 in total length (3·6—4·4 and 4·0—6·0 in standard length). Snout prominent, overhanging mouth, 2·4--3·0 in head. Eyes subcutaneous, dorsolateral, in the middle of posterior half of head, 1·8—3·4 in the length of head, 0·6—1·3 in snout, 0·5—0·8 in interorbital. Mouth small, horizontal, crescentic, lips thicks, fleshy, continuous at angles of mouth; the median portion of upper lip swollen, plicated; gape of mouth 2.0 in width of head. Nostrils close together, midway between the anterior margin of eye and snout or slightly nearer to eye than the snout end, separated from each other by a flap bearing nasal barbel. Maxillary barbels with stiff basal portion, shorter than head, outer and inner mandiculars in a transverse row behind the lower lip, often with 2 finger-like processes in the midventral line between bases of inner mandibular barbels, the nasal barbels very minute.

Teeth villiform in jaws; palate edentulous. Median longitudinal groove on head extending to the base of occipital process. Occipital process 3 times as long as broad at its base, separated from the basal bone of dorsal by a short interspace. Gill openings extending to ventral surface, separated from each other by a distance 1/2 of the gape of mouth, 0·1—6·0 in eye diameter; an gill membranes confluent with skin of isthmus. Rayed dorsal 1·0—1·2 in head, with a strong spine finely serrated externally along the distal portion, smooth internally; adipose dorsal base equal to rayed dorsal base, extending opposite to 8th or 9th branched ray of anal; interdorsal 2·0 times rayed dorsal or adipose dorsal base. Pectorals above level of pelvics, 1·0—1·1 in head or 1·2 times head, not reaching pelvics, with a strong spine denticulated internally and serrated along the distal half externally. Pelvics 1·6—2·0 in head, not reaching anal origin, extending to anal opening or slightly beyond it; origin behind the last dorsal ray, nearer to anal origin than to pelvic base. Anal 1·3—1·8 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, 1·2 in head, 5·5——6·4 in total length; upper lobe slightly longer; least height of caudal peduncle 1·2—2·1 in its length. Lateral line.

Skin smooth. Yellowish bronze colour above, becoming silvery below; three dark band on head, 4 on the back descending as low as the lateral line; caudal with semilunar black band; outer halves of dorsal, pectorals, pelvics and anal blackish.

It rarely exceeds 152 mm. in length; in freshwater, tidal rivers.

Distribution.—India : Punjab, Delhi, U.P., Bihar, W. Bengal, Orissa, Assam. Burma : Chindwin drainage. Pakistan. Bangladesh. Nepal : Chutu Gouri in Terai.

376. **Gagata gagata** (Hamilton)

(Pl. V, figs. 6, 7)

1822. *Pimelodus gagata* Hamilton, *Fish. Ganges*, pp. 197, 379, pl. 39, fig. 65 (type locality : freshwater rivers and estuaries of Bengal).

1877. *Gagata cenia* Day (*partim*), *Fish. India*, p. 492, pl. 115, fig. 4 (the specimen figured was from Calcutta).

1889. *Gagata cenia* Day (*partim*), *Fauna Brit. India*, Fish., 1, p 208, fig. 75.

1941. *Gagata gagata* Hora & Law, *Rec. Indian Mus.*, 43, p. 15, pl. 1, figs. 1, 2 (Allahabad, Hooghli river, Pusar river, Khulna, Prome, Burma).

B. 5—6; D. 1/6/0; P. 1/9; V. 1/5; A. 3—4/10—12; C. 19.

Body elongate, compressed, flattened ventrally to the pelvics. Head covered with soft skin, broadly pointed in front, width 1·2—1·5 in its length, 4·3—4·9; depth 4·1—5·0 in the total length (3·6—4·2 and 3·3—4·3 in standard length). Snout prominent, globular, compressed, over hanging mouth, 2·5—2·6 in head. Eyes subcutaneous, dorso-lateral, in the posterior half of head, 2·6—3·7 in head, 0·8—1·5 in snout, 0·6—1·2 in interorbital. Mouth small, horizontal, lips thick, slightly fimbriated, continuous at angles of mouth; gape 3·0 in width of head. Nostrils close together , nearer to tip of snout than to the anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with stiff bony bases and a membraneous flap along the inner side of the proximal 1/3 of their length, extending beyond the pectoral base, the outer and inner mandibulars with swollen base, in a transverse row behind the lower lip, shorter than 1/2 the length of maxillary barbels, the nasals small, rarely as long as diameter of eye. Teeth villiform in jaws; palate edentulous. Median longitudinal groove on head extending to the end of occipital process. Occipital process long, narrow, 4·0—5·0 times as long as broad at its base, separated from the basal bone of dorsal by a very short interspace. Gill openings wide, extending to ventral surface, separated from each other by a distance 0·5—0·9 eye diameter or equal to the gape of mouth; gill membranes confluent with skin of isthmus. Cubito-humeral process moderately developed. Rayed dorsal pointed, longer than head, with a spine shorter or as long as, or longer than head, finely serrated anteriorly along its distal 1/3 of its length, entire posteriorly; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base, extending opposite to last anal ray, interdorsal 1·1 in adipose dorsal base. Pectorals pointed, placed above the level of the ventral surface, 1·3 times head, not extending to pelvics, with a strong spine longer than head, denticulated internally and externally with a few teeth at its distal end. Pelvics 1·5 in head, extending beyond anal opening, not reaching anal; origin opposite the 5th branched dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, upper lobe better developed than lower, 1·1 in head, 4·7—5·3 in total length; least height of caudal peduncle 1·8—2·00 in its length. Lateral line.

Skin smooth; dorsal surface of head with bony ridges. Opaque yellow to dull grey; pectorals, distal halves of dorsal, pelvics, and anal black; caudal fin whitish.

It attains 305 mm. in length; in fresh and tidal water.

Distribution.—India : U.P., West Bengal. Bangladesh. Burma : the Irrawaddi river system.

377. Gagata itchkea (Sykes)
(Pl. VI, figs. 1, 2)

1838. *Phractocephalus itchkea* Sykes, *Proc. zool. Soc. Lond.*, Part 6, p. 164.

1840. *Phractocephalus itchkea* Sykes, *Trans. zool. Soc. Lond.*, 2, p. 373, pl. 67, fig. 1 (type locality):

1864. *Macrones itchkea* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 84 (Dukhun).

1877. *Gagata itchkeea* Day, *Fish. India*, p. 492, pl. 115, fig. 1 (rivers of the Deccan: specimen figured was from Poona).

1889. *Gagata itchkeea* Day, *Fauna Brit. India*, Fish., **1**, p. 209

1937. *Nangra viridescens* (*nec.* Hamilton) Hora, *Rec. Indian Mus.* **39**, p. 19 (Cauvery river, Coorg, Mysore).

1937. *Nangra viridescens* (*nec* Hamilton) Hora & Misra, *J. Bombay nat. Hist. Soc.*, **39**, p. 511 (Deolali).

1938. *Nangra viridescens* (*nec* Hamilton) Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 23 (Poona).

1941. *Gangata itchkea* Hora & Law, *Rec. Indian Mus.*, **43**, p. 18, pl. 1, figs. 3, 4 (Deolali, Poona, Satara, the Cauvery, Meema).

Vernacular names.—INDIA : *Bibua*, Deolali; *Pcdhnah*, Poona.

D. 2/6/0; P. 1/8; V. 1/5; A. 3-4/9-10; C. 19.

Body elongate, cylindrical, flattened ventrally to the pelvics. Head covered with soft skin, rounded anteriorly, width 1·1—1·5 in its length, 4·5—5·0; depth 5·5—6·0 in total length (3·5—4·0 and 4·0—5·4 in the standard length.) Snout rounded, projecting over mouth, 2·8—3·8 in head. Eyes subcutaneous, dorso-lateral, 2·2—2·7 in head, 0·6—1·0 in snout., 0·6—0·8 in interorbital. Mouth small, inferior, transverse, lips thick, fleshy, continuous at angles of mouth; gape of mouth 2·8 in width of head. Nostrils close together, midway between snout end and anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with stiff bases, reaching 1/2 of the length of the pectoral, the outer and inner mandibulars nearly equal in length, not in a transverse line behind the lower lip, the latter being placed slightly in advance of the former, reaching to the pectoral base, the nasal barbels small, 2·0 in eye diameter. Teeth small, villiform in jaws; palate edentulous. Median longitudinal groove on head extending to base of occipital process. Occipital process long, narrow, 3 times as long as broad at its base, separated from the basal bone of dorsal by a short distance. Gill openings extending to the ventral surface, separated from each other by a distance less than 1/5 of the diameter of the eye, 1·5 times gape of mouth; gill membranes confluent with skin of isthmus. Cubito-humeral process not well developed. Rayed dorsal 1·1 in head, with an entire, strong spine, origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·5 in rayed dorsal base, extending opposite to last anal ray; interdorsal 1·3 times adipose dorsal base. Pectorals pointed, above level of pelvics, 1·1 times head, almost reaching pelvic base, with a strong spine, 1·1 in head, roughened externally; serrated, 2/3 of its length internally. Pelvics 1·4 in head, extending beyond anal opening, not reaching anal origin, nearer to anal origin than to pectoral base; origin opposite to 4th ray of rayed dorsal. Anal 1·2—1·4 in head, origin slightly before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal pointed, deeply forked, upper slightly longer or equal to head, 4·5—5·0 in total length; least height of caudal peduncle 1·1—1·8 in its length. Lateral line.

Skin smooth. Yellowish bronze above, becoming silvery on sides and abdomen; some dark blotches along the back descending to half way down the sides; a black blotch on each lobe of caudal and another on dorsal fin.

It attains 76 mm. in length; in freshwater.

Distribution.—India : Deolali, Poona, Satara, the Cauvery river, Mysore. Burma: Meema.

378. **Gagata nangra** (Hamilton)

(Pl. VI, figs. 3, 4)

1822. *Pimelodus nangra* Hamilton, *Fish. Ganges,* pp. 193, 378, pl. 11, fig. 63 (type locality : Kosi).

1877. *Nangra buchanani* Day, *Fish. India,* p. 494, pl. 113, fig. 3 (type locality: Ganges, Jumna & Indus; the specimen figured was from Delhi).

1889. *Nangra buchanani* Day, *Fauna Brit. India, Fish.,* **1,** p. 211.

1941. *Gagata nangra* Hora & Law, *Rec. Indian Mus.,* **43,** p. 26, pl. 1, figs. 9, 10 (the Kosi river, the Ganges, Jumna and Indus, the Hooghly at Nawabgunj).

B. 5; D. 2/9-10/0; P. 1/9; V. 1/5; A. 3/10; C. 16-17.

Body elongate, flattened ventrally to the pelvics. Head bluntly pointed, long, oval, height 2·0,width 1·0—1·5 in its length, 4·5—5·5; depth 7·0 in total length (3·8—4·5, and 6·0 in the standard length). Snout long, pointed, 2·8—3·0 in head, projecting in front of mouth. Eyes subcutaneous, dorso-lateral, 5·3—6·0 in head, 1·2 in snout, 1·2—1·3 in interorbital. Mouth inferior, crescentic, horizontal; lips thin; gape of mouth 1·5 in width of head. Nostrils close together, nearer the snout end than to the anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with stiff basal portions, extending to anal origin or slightly beyond it, outer mandibulars to pelvic base, with their bases wide apart, inner anterior to outer, the inner to middle of the pectorals, the nasals as long as head. Teeth villiform in jaws; palate edentulous. Median longitudinal groove on head extending to base of occipital process; occipital process 3 times as long as broad, extending to basal bone of dorsal. Gill openings wide, extending to ventral surface, anteriorly to the median line; gill membranes united with each other. Cubito-humeral process moderately developed. Rayed dorsal short, low, 1·1 times head, with a small strong spine, smooth on both edges; origin midway between snout end and adipose dorsal origin; adipose dorsal base 1·1 in rayed dorsal base, extending 1/2 eye diameter behind last anal ray interdorsal 1·2 in adipose dorsal base. Pectorals 1·1—1·3 in head, placed above the level of pelvics, not reaching pelvics, with a strong, broad spine smooth externally, strongly denticulated internally. Pelvics not reaching anal, 1·3 in head, extending beyond anal opening; origin below middle of the base of rayed dorsal, nearer to anal origin than to pectoral base. Anal nearly equal to head; origin 1/2 eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, 1·2 times head, 3·7—4·5 in total length, lobes sharply pointed; least height of caudal peduncle 2·2—2·7 in its length. Lateral line.

Skin smooth. Muddy with 3 indistinct, vertical, greenish half bands; a faint longitudinal band below the base of dorsal and another along the lateral line; a vertical bar at caudal base.

It attains 50 mm. in length; in fresh and tidal waters.

Distribution.—India : the Yamuna, the Ganga, the Kosi and the Hooghly rivers. Pakistan : the Indus and the Ganga rivers. Nepal : the Kosi river.

379. **Gagata viridescens** (Hamilton)

(Pl. VI, fig. 5, 6)

1822. *Pimelodus viridescens* Hamilton, *Fish. Ganges*, pp. 173, 376, pl. 10, fig. 56 (type locality: rivers of the northern parts of Bengal).

1877. *Nangra punctata* Day, *Fish. India*, p. 494, pl. 115, fig. 8 (type locality : Sone river at Birbhoom).

1877. *Nangra viridescens* Day, *Fish. India*, p. 494, pl. 115, fig. 7.

1889. *Nangra punctata* Day, *Fauna Brit. India, Fish.* , **1**, p. 212, fig. 76.

1889. *Nangra viridescens* Day, *Fauna Brit. India, Fish.* **1**, p. 212.

1941. *Gagata viridescens* Hora & Law, *Rec. Indian Mus.*, **43**, p. 24, pl. 1, fig. 7, 8 (Tezpur, Assam, Barakar, Santal Parganas; occurrence in the Deccan doubtful).

Vernacular name.—INDIA : *Huddah*, Hindi.

B. 5; D. 1/6/0; P. 1/8; V. 1/5; A. 3-4/8; C. 18-21.

Body elongate, compressed, flattened ventrally to the pelvics. Head covered with minute spine-like structures, height 1·6—1·7, width 1·2—1·3 in its length, 4·2—4·5;

depth 5·8—6·3 in total length (3·3—3·5 and 4·6—5·2 in standard length). Snout broad, rounded, 2·8—3·0 in head, overhanging mouth. Eyes subcutaneous, dorsolateral, in the middle of head, 3·5—4·1 in head, 1·3—1·7 in snout, 1·0 in interorbital. Mouth wide, inferior, horizontal; lips fleshy, continuous at angles of mouth, upper papillated, both lips plicated at angles of mouth; gape of mouth 1·8 in width of head. Nostrils close together, nearer to snout end than to the anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with stiff basal portions, reaching posterior border of eye, outer and inner mandlibulars much shorter, their bases wide apart, thinner in advance of outer, the nasals minute, rudimentary. Teeth villiform in jaws; none on palate. Median longitudinal groove on head extending to the base of occipital process; occipital process long, club-shaped, 4 times as long as broad at its base, separated from the basal bone of the dorsal by a short interspace. Gill openings wide, extending to the ventral surface, separated from each other by a distance 1/2 of the gape of month. Rayed dorsal 1·6— 1· 7 in head with a small, strong entire spine; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base, extending opposite to the last anal ray; interdorsal equal to or 1 .3 times adipose dorsal base. Pectorals 1·1 — 1·4 in head, placed above the level of pelvics, not reaching pelvics, with a strong spine smooth externally and strongly denticulated internally. Pelvics 2.0 in head, extending beyond anal opening, not reaching anal origin behind the last dorsal ray, nearer to anal origin than to pectorol base. Anal short, 1·6—1·7 in head; origin opposite to or slightly behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes subequal, 1 1 in head, 4·6—4 .9 total length; least height of caudal peduncle 1·6—1·7 in its length.Lateral line.

Skin smooth. Coppery glossed with gold on sides; a black blotch on occiput, 3 or 4 along the back descending half way down the sides; a black band on dorsal; some black markings on caudal.

It attains 85 mm. in length; in freshwater.

Distribution.—India : the Yamuna at Delhi, rivers of northern parts of West Bengal, Bihar and Assam, Bangladesh.

159. Genus **Erethistes** Müller & Troschel

1849. *Erethistes* Müller & Troschel, *Horae Ichth.*, 3, p. 12, pl. 1, fig. 3 (type, *E. pusillus* M. T., orthotypic; *fide*, D. S. Jordon, *Genera of Fishes*, II, p. 243)

Body short, flattened ventrally to pelvic base. Head osseous superiorly depressed, as broad as long, flattened ventrally. Snout conical. Mouth small, inferior, a short distance behind the conical snout end. Nostrils close together, separated by a flap bearing a short nasal barbel. Eyes moderate, subcutaneous, superior, in the middle of head. 8 short barbels with alternate black and white annulations. Teeth villiform in both jaws; in upper jaw arranged in 3 or 4 series, those of the outer series elongated, flat with their bases ensheathed in mascular pads; in lower jaw minute and scattered; none on palate. A shallow median longitudinal groove on head reaching base of occipital process. Occipital process reaching the considerably dilated bone of the dorsal fin. Scapular and humero-cubital processes well developed, the humeral processes supporting the edges of the abdomen extending to end of pectoral fin. Gill openings narrow, separated from each other by a distance greater than the distance between mouth and gill openings; gill membranes confluent with isthmus. No adhesive apparatus on chest or thorax. Rayed dorsal with a strong serrated spine. A short adipose dorsal with interdorsal space. Pectorals low, horizontal, non-plaited, with a strong flattened spine, bearing divergent spines externally and with internal serrations. Pelvics with 6 rays, non-plaited; origin below middle of rayed dorsal. A short anal below adipose dorsal. Caudal forked. Lateral line. 4—5 rows of tubercles on body; dorsal of head granulated. Air bladder in 2 globular, lateral lobes; lobes being connected by a median transverse tube and protected by cubital and scapular processes. Branchiostegals 6.

Distribution.—India, Burma.

380. **Erethistes pusillus** Müller & Troschel

(Pl. VII, figs. 1—6)

1849. *Erethistes pusillus* Müller & Troschel, *Horae Ichth.*, 3, p. 12, pl. 1, fig. 3 (type locality : Assam; 1 specimen about 2 inches long).

1864. *Erethistes pusillus* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 264 (typical specimen is not quite 2 inches long).

1869. *Hara buchanani* (*nec.* Blyth) Day, *Proc. zool. Soc. Lond.*, p. 369 (Orissa).

1877. *Erethistes hara* (*nec.* Hamilton) Day (*partim*), *Fish.* [*India*, p. 452, pl. 102, figs. 1,2.

1889. *Erethistes hara* (*nec.* Hamilton) Day (*partim*), *Fauna Brit. India*, Fish., 1, p. 209.

1950. *Erethistes pussilus* Hora, *Rec. Indian Mus.*, 47, p. 186, pl. 1, figs. 1-6 (Tenasserim; Bijli hill, Kamrup Dt Assam; Jharahi river, Siripur, Saran Dt., Bihar ; Lakhmidi river near Sitamari Rly. Station, Bihar).

B. 6; D. 1/6/0; P. 1/6; V 1/5; A. 11 (3/8); C. 15.

Body moderately elongate, flattened ventrally. Head as broad as long, ventral surface flattened, pointed anteriorly, 4 ·0—4 ·5; depth 4 ·0—5 ·0 in total length (3 ·5—4 ·3 and 3 ·5—4 ·4 in standard length). Snout 2 ·0 in head. Eyes subcutaneous, superior, in the posterior half of head, 8 ·0 in head, 4 ·0 in snout, 3 ·0 in interorbital. Mouth inferior, narrow, upper jaw longer; gape of mouth ¼ the width of head. Maxillary barbels with broad bases, reaching to 1/3 of the pectorals, outer and inner mandibulars to gill opening, the nasals small, not reaching anterior margin of orbit. A median longitudinal groove on head reaching the base of occipital process. Occipital process narrow, 3 times as long as broad, reaching basal bone of dorsal. Scapular and cubito-humeral processes pronounced Teeth villiform, in narrow bands in jaws; palate edentulous. No thoracic adhesive apparatus. Rayed dorsal 1 ·10—1 ·3 times head, with a spine roughened externally, serrated internally above pectoral fin; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1 ·3 in rayed dorsal base, extending opposite to last anal ray; interdorsal 1 ·8 in adipose dorsal base, 2 ·0 in rayed dorsal base. Pectorals low, horizontal, reaching beyond pelvic origin, 1 ·2 times head, with a strong, flattened spine with external denticulations in the form of divergent spines; denticulations alternately directed forwards with the last on the tip directed backwards while internal denticulations more pronounced and directed forwards. Pelvics non-plaited, not reaching anal, 1 ·2—1 ·5 in head; origin below middle of rayed dorsal base, nearer to anal origin than to pectoral base. Anal 1 ·1 in head; origin slightly behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked or deeply lunate, nearly equal to head, 4·6 in total length; lobes subequal; least height of caudal peduncle 2·8—3·0 in its length. Lateral line.

Dorsal surface with short spines directed backwards. Dorsal surface of head granulated, 4—5 rows of tubercles on body. Yellowish brown blotched with darker; fins with black bands or markings; all the barbels annulated with black.

It attains about 50 mm. in length; in freshwater.

Distribution.—India : Bijli Hill, Assam, Jharahi and Lakhmidi rivers, Bihar. Burma : Tenasserim.

160. Genus **Erethistoides** Hora

1950. *Erethistoides* Hora, *Rec. Indian Mus.*, 47, p. 190 (type *E. montana* Hora, orthotypic).

Body short, flattened ventrally to pelvic base. Head bony superiorly, greatly depressed, flattened ventrally, broader than long. Snout broadly conical. Eyes moderate, superior, subcutaneous, in the posterior half of head, 8 barbels. Nostrils close together separated by a flap bearing a barbel. Mouth inferior, considerably behind the snout end, upper jaw longer. Teeth villiform in band in jaws; palate edentulous. Median longitudinal groove on head, reaching base of occipital process. Occipital process long, narrow, not just reaching the considerably expanded basal bone of dorsal fin. Scapular humero-cubital processes well developed. The humeral process extending to end of pectoral fin. Gill opening narrow, separated from each other by a distance less than twice the distance between mouth and gill openings. Gill membranes confluent with isthmus. No thoracic adhesive apparatus. Rayed dorsal with a strong spine finely serrated externally and denticulated internally. A short, low, adipose dorsal with an interdorsal space. Pectorals low, horizontal, non-plaited, with a strong flattened spine bearing externally forwardly directed spines in proximal half and backwardly directed spines in distal half and with internal denticulations. Pelvics non-plaited, with 6 rays, below middle of rayed dorsal base. A short anal below adipose dorsal. Caudal forked, lobes subequal or lower lobe the longer. Skin tuberculated or smooth in some portions of body. Dorsal surface of head, humero-cubital scapular processes roughened. Air bladder partially or completely enclosed in bony capsule.

Distribution.—India.

The genus **Erethistoides** is represented by two subspecies in the Indian region.

Key to the subspecies of genus **Erethistoides** Hora

1. Depth of body 5·1 in standard length; least height of caudal peduncle 2·5 in its length; not profusely tuberculated; body not banded..	*E. montana*
2. Depth of body 6·1—6·3 in standard length; least height of caudal peduncle 3·0 in its length; profusely tuberculated; body banded	*E. montana montana*

15. Erethistoides montana montana Hora

(Pl. VII, figs. 7-9)

1950. *Erethistoides montana* Hora, *Rec. Indian Mus.*, **47**, p. 191, pl. 1, figs. 10—12 (type locality: streamlets round about Tangla, Darrang Dt., Assam; type in the Zoological Survey of India).

B. 6; D. 1/5/O; P. 1/6; V 1/5; A. 9; C. 13.

Body moderately elongate, flattened ventrally. Head 1·1 times its breadth, ventrally flattened, broadly pointed anteriorly, 4·3; depth 7·1 in total length (3·2—3·3 and 6·1—6·3 in standard length). Snout depressed, 1·8—2·0 in head. Eyes subcutaneous, superior, in the posterior half of head, 11·5 in head, 5.5 in snout, 2·5 in interorbital. Mouth inferior, upper jaw longer; gape 2·2—2·5 in width of head; lips thin, papillated. Maxillary barbels with broad bases, reaching first third of pectorals, outer mandibulars to gill openings, the inner mandibulars short, the nasals small, equalling 1·5—2·0 eye diameters. Median longitudinal groove reaching base of occipital process. Occipital process narrow, slightly separated from the expanded wing-like basal bone of dorsal fin. Cubital equal to occipital process. Scapular process short, stumpy. Humeral process long, curved, extending nearly to the pelvic base. Teeth villiform in band in jaws;

none on palate. No thoracic adhesive apparatus. Rayed dorsal 1·1—1·3 in head, with a strong spine finely serrated externally, denticulated internally, nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base; interdorsal 1·4 times adipose dorsal. Pectorals low, horizontal, non-plaited, reaching beyond pelvic origin, 1.1 times head, with a strong flattened spine, externally serrated and internally denticulated, external denticulations directed forwards in the proximal half and directed backwards in the distal half. Pelvics not reaching anal, non-plaited, 1·6—1·7 in head; origin below middle of rayed dorsal base, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin 1/2 an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, lower lobe longer, 1·1 in head, 4·2 in total length, least height of caudal peduncle 3·0 in its length. Lateral line.

Skin tuberculated. Dusky above, dirty white below; a dark band over nape and 3 similar cross bands on body, one below first dorsal, second below adipose dorsal and the third on caudal base; dorsal and caudal banded distally.

It attains 48 mm. in length; in freshwater.

Distribution.—India : streamlets round about Tangla, Darrang Dt., Assam.

16. **Erethistoides montana pipri** Hora

(Pl. VIII, figs. 1-3)

1950. *Erethistoides montana pipri* Hora, *Rec. Indian Mus.*, 47, p. 193, pl. 1, figs. 7-9 (type locality: the Rihand R. at Pipri; type in the Zoological Survey of India, Calcutta).

B. 6; D. 1/5/0; P. 1/6; V. 1/5; A. 9; C. 13.

Body moderate elongate, flattened ventrally. Head 1·0 in its breadth, ventrally flattened 4·1; depth 6·5 in total length (3·2 and 5·1 in standard length). Snout slightly depressed, 2·0 in head. Eyes subcutaneous, superior, in the posterior half of head, 8·0 in head, 4·0 in snout. Mouth inferior, upper jaw longer; gape 3·0 in width of head; lips thin papillated. Maxillary barbels with broad bases reaching a little beyond pectoral base, outer mandibulars to gill openings, the inner slightly shorter, the nasals minute, about 1/2 eye diameter. Median longitudinal groove reaching base of occipital process. Occipital process narrow, sightly separated from the expanded basal bone of dorsal. Cubital, humeral, scapular processes prominent. Humeral processes extending nearly to pelvic base. Teeth villiform in band in jaws; none on palate. No thoracic adhesive apparatus. Rayed dorsal 1·2 in head, with a strong spine serrated internally; origin nearer to adipose dorsal than to snout end; adipose dorsal base equal to rayed dorsal base; interdorsal 1·2 in adipose dorsal. Pectorals low, horizontal, non-plaited, reaching beyond pelvic origin, 1·1 times head, serrated externally, denticulated internally, external denticulations directed forwards in the proximal half, backwards in the distal half. Pelvics non-plaited, just reaching anal origin, 1·4 in head; origin above middle of rayed dorsal base, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, lower lobe longer, 1·3 in head, 5·1 in total length; least height of caudal peduncle 2·5 in its length. Lateral line.

Skin sparsely tuberculated; dorsal surface behind rayed dorsal and ventral surface behind pelvics, smooth. Dusky above lighter below with no cross bands on body.

It attains 39 mm. in length; in freshwater.

Distribution.—India, Rihand river, Pipri, Mirzapur Dt., U. P.

161. Genus **Conta** Hora

1950. *Conta* Hora, *Rec. Indian Mus.*, 47, p. 194 (type, *Pimelodus conta* Ham., tautotypic).

Body elongate, subcylindrical, neither much depressed dorsally nor much flattened ventrally. Head slightly depressed, small, longer than broad, flattened ventrally. Snout bluntly pointed. Eyes small, superior, subcutaneous, in the posterior half of head. Nostrils nearer snout end than to anterior margin of eye. Mouth small, inferior: 8 barbels with alternate black and white annulations. Teeth villiform in both jaws; palate edentulous. A shallow, median longitudinal groove extending to base of occipital process. Occipital process separated from the basal bone of dorsal by very small interspace. Scapular, humero-cubital processes well developed. Humeral processes supporting the abdominal edges short, not extending beyond pectoral base. Gill openings narrow, separated from each other by a distance slightly less than the distance between mouth and gill openings; gill membranes confluent with isthmus. An elongated adhesive apparatus extending from gill opening to pelvics. Rayed dorsal with strong spines serrated on both edges. A short adipose dorsal above last third of anal with a long interdorsal space. Pectorals low, non-plaited, with a strong flattened spine serrated on both edges; external serrations directed backwards and internal forwards. Pelvics with 6 rays, non-plaited, below middle of adipose dorsal. Anal origin below middle of adipose dorsal base. Caudal forked, upper lobe longer, filamentous. Caudal peduncle very narrow and long. Lateral line with prominent tubercles. Skin tuberculated. Air bladder 2 chambered, covered by bony plates posteriorly and connected anteriorly by a horizontal tube. Branchiostegals 6.

Distribution.—India.

The genus **Conta** is represented by two species in the Indian region.

Key to species of genus **Conta** Hora

1. Least height of caudal peduncle 5.0—8.0 in its length ; pelvic origin below middle of rayed dorsal base	*C. conta*
2. Least height of caudal peduncle 2·2 in its length ; pelvic origin below last dorsal ray	*C. elongata*

381. **Conta conta** (Hamilton)

(Pl. VIII, figs. 4-6)

1822. *Pimelodus conta* Hamilton, *Fish. Ganges*, p. 191, 378 (type locality : Mahananda R., N. E. Bengal).

1860. *Hara conta* Blyth, *J. As. Soc. Bengal*, **29,** p. 152,

1864. *Hara conta* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 189 (Mahananda river; 5 inches long).

1929. *Pimelodus conta* Hora, *Mem. Indian Mus.*, **9,** pl. 21, fig. 8 (MS drawing of Hamilton reproduced).

1950. *Conta conta* Hora (*partim*), *Rec. India Mus.*, **47,** p. 195, pl. 2, figs. 4—6 (Darjeeling, Himalayas).

D. 1/6/0; P. 1/7; V. 6; A. 10(3/7); C. 17.

Body elongate, subcylindrical, slender. Head depressed, small, oval, 1·1—1·4 times breadth, 8·2; depth 7·8 in total length (4·5—5·5 and 5·3—6·5 in standard length). Snout bluntly pointed, 1·9 in head. Eyes subcutaneous, superior, in the posterior half of head, 7·0 in head, 3·6 in snout. Mouth inferior, narrow, upper jaw longer; gape of mouth 4·0—5·0 in width of head; lips papillated. Maxillary barbels with broad bases, reaching gill opening, outer and inner mandibulars shorter, the nasals half eye diameter. Median longitudinal groove on head reaching occipital process. Occipital process narrow, nearly reaching basal bone of dorsal fin. Scapular, cubito-humeral processes well developed. Humeral processes not extending beyond pectoral base. Teeth villiform in band in jaws; palate edentulous. An elongated adhesive apparatus extending from isthmus to pelvic base. Rayed dorsal 1·2 times head with a strong spine strongly denticulated externally, finely serrated internally, nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·5 in rayed dorsal base extending opposite to last anal ray; interdorsal 5·0 times adipose dorsal base. Pectorals low, horizontal reaching beyond pelvic origin, 1·3 times head with a strong spine serrated along both edges; external serrations directed backwards, internal more prominent directed forwards. Pelvics non-plaited, 1·2 in head, reaching anal origin; origin below middle of rayed dorsal base, nearer to anal origin than pectoral base. Anal equal to head; origin 4 eye diameters before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, its outer ray prolonged, upper the longer, 2·0 times head, 3·7 in total length; least height of caudal peduncle 5·0—8·0 in its length. Lateral line.

Skin tuberculated; tubercles along lateral line very prominent. Deep brownish grey above dirty white below; barbels with dark and white annulations; fins with light bands; outer rays of caudal lightly coloured forming a whitish border.

It attains 49·9 mm. in standard length; in freshwater.

Distribution.—India: Mahananda and Laska rivers, North Bengal.

382. **Conta elongata** (Day)

(Text-fig. 43)

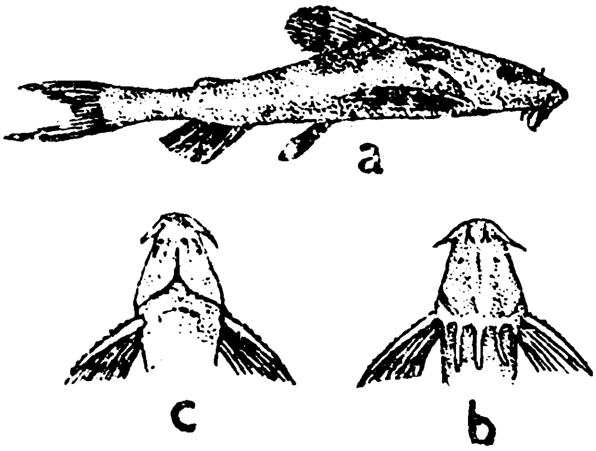
1871. *Hara elongata* Day, *Proc. zool. Soc. Lond.*, p. 704 (type locality : Garo Hills, Assam; 1 specimen 2·25 inches long).

1877. *Erethistes elongata* Day, *Fish. India*, p. 453, pl. 102, fig. 5.

1889. *Erethistes elongatus* Day, *Fauna Brit. India*, Fish., 1, p. 207.

1921. *Erethistes elongata* Hora, *Rec. Indian Mus.*, 22, p. 738.

1938. *Erethistes elongatus* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.* 3 pp. 7, 98 (small stream near Siliguri Phuljhora, Apalchand forest, W. Duars; longest specimen was 3·3 inches long).



TEXT-FIG. 43.—*Conta elongata* (Day) (*a*) Lateral view (*b*) Dorsal view of head (*c*) Ventral view of head. (After F. Day)

Vernacular names.—INDIA : *Bot-tengra*, Bengali ; *Powan*, Bihar; *Na-tarm*, Rabha.

D. 1/6/0; P. 1/6; V. 6; A. 10 (3/7); C. 17.

Body elongate, slender, subcylindrical. Head depressed, 6·5; depth 7·0 in the total length (5·0 and 5·4 in standard length). Snout bluntly pointed, 1·9 in head, Eyes small, subcutaneous, superior in the posterior half of head, 9·0 in head, 4·5 in snout. Mouth inferior, narrow, upper jaw slightly longer; gape of mouth 3·5 in width of head. Eight short barbels, none extending beyond eye. Median longitudinal groove reaching occipital process. Occipital process 3 times as long as broad, separated from the basal bone of dorsal by a short interspace. The scapular and cubito-humeral processes well developed. Humeral process not extending beyond pectoral base. Teeth villiform in band in jaws; palate edentulous. Faint marking of an elongated adhesive apparatus extending from isthmus to pelvic base. Rayed dorsal 1·0 in head, with a strong spine equal to head, strongly denticulated externally with teeth directed downwards and with faint serration internally; origin midway between adipose dorsal and snout end; adipose dorsal base 1·2 in rayed dorsal, extending to opposite to last anal ray; interdorsal 2·0 times adipose dorsal base. Pectorals non-plaited, low, horizontal not reaching pelvics, 1·1 times head, with a strong flattened spine strongly denticulated internally and serrated externally. Pelvics non-plaited, not reaching anal, 1·4 in head; origin below last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·2 in head; origin half an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, its outer rays prolonged, 1·3 times head, 4·6 in total length; least height of caudal peduncle 2·2 in its length. Lateral line.

Skin tuberculated. Brownish, banded with darker; fins yellow with black bands.

It attains 78 mm. in length; in freshwater.

Distribution.—India : Garo hills, Assam, Bhareli river, Belipara Frontier Tract, Assam, small stream near Siliguri and Phuljhora, W. Duars, W. Bengal.

162. Genus **Hara** Blyth

1860. *Hara* Blyth, *J. As. Soc. Bengal*, **29**, p. 151 (type, *Pimelodus hara* Ham., tautotypic).

Body moderately elongate, flattened ventrally. Head depressed as broad as long or broader than long, ventrally flattened. Snout bluntly pointed. Eyes small, superior, subcutaenous in the middle or posterior part of head. 8 barbels. Nostrils close together, separated by a flap bearing a barbel. Mouth inferior, upper jaw longer. Teeth villiform in band in jaws; palate edentulous. A median longitudinal groove on head reaching or not reaching the base of occipital process. Occipital process separated from the basal bone of dorsal by a very short interspace. Scapular and humero-cubital processes well developed. The humeral process extending nearly to the pelvic base. Gill opening narrow separated from each other by a distance nearly equal to the distance between mouth and gill opening. Gill membranes confluent with isthmus. Rayed dorsal serrated internally. A short low adipose dorsal with interdorsal space. Pectorals low, horizontal, non-plaited with a strong spine denticulated internally and serrated externally. Pelvics non-plaited with 6 rays below interdorsal space or below rayed dorsal. A short anal below adipose dorsal. Caudal forked, upper lobe filamentous or lower lobe slightly longer. Skin tuberculated with grandular pores on chest. Air bladder, 2 chambered lodged in deep pits and partially enclosed by bone.

Distribution.—India, Bangladesh, Nepal, Burma.

The genus **Hara** is represented by four species in the region.

Key to species of genus **Hara** Blyth

1.	Pelvic origin below last dorsal ray; upper lobe of caudal fin with long filamentous process	*H. filamentosa*
2.	Pelvic origin not below last dorsal ray; upper lobe of caudal without long filamentous process .	3
3.	Interdorsal 1.3 times adipose dorsal base ; pelvic origin below serrated dorsal ray; adipose dorsal base extending an eye diameter behind last anal ray . . .	*H. hara*
4.	Interdorsal equal to or slightly smaller than adipose dorsal base ; pelvic origin below middle of rayed dorsal base: adipose dorsal base extending opposite to last anal ray.	5
5.	Interdorsal equal to adipose dorsal base ; pectorals 1·7 times head length	*H. jerdoni*
6.	Interdorsal 1·1 adipose dorsal base; pectorals equal to head	*H. horai*

383. **Hara filamentosa** Blyth

(Text-fig. 44)

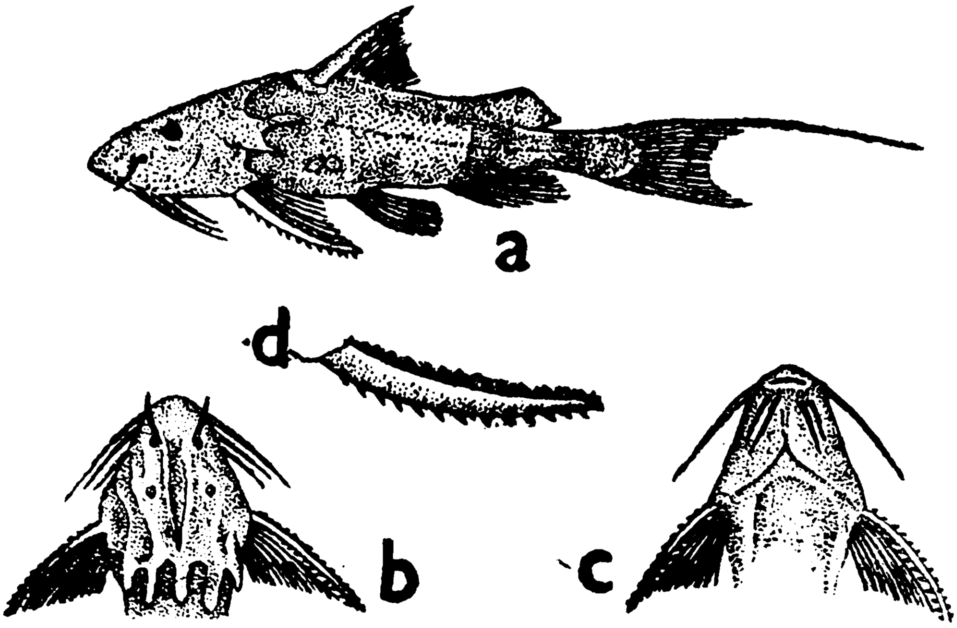
1860. *Hara filamentosa* Blyth, *J. As. Soc. Bengal*, 29 p. 151 (type locality : Tenasserim).

1877. *Erethistes conta* (*nec.* Hamilton) Day, *Fish. India*, p. 453, pl. 102, fig. 4.

1890. *Erethistes conta* (*nec.* Hamilton) Vinciguerra, *Pesci di Birmania*, pp. 29, 122 (Meetan : Mandalay: Teinzo).

1929. *Erethistes conta* (*nec.* Hamilton) Prashad & Mukerji, *Rec. Indian Mus.*, 31, p. 186 (south end of Indawgyi Lake).

1950. *Hara hara* Hora (*partim*), *Rec. Indian Mus.*, 47, p. 200 (*nec.* pl. 2, figs. 1-3).



TEXT-FIG. 44.—*Hara filamentosa* Blyth (*a*) Lateral view (*b*) Dorsal view of head (*c*) Ventral view of head (*d*) Pectoral spine showing external and internal serrae (After F. Day)

Vernacular name.—BURMA : *Ta-nga-ngo* Indawgyi Lake, Myitkynia Dt.

D. 1/6/0; P. 1/6; V. 6; A. 11 (3/8); C. 17.

Body moderately elongated, flattened ventrally. Head 1·1 times broader than long, flattened ventrally, broadly conical 5·3; depth 6·7 in total length (3·5 and 4·4 in standard length). Snout depressed, bluntly pointed, 2·0 in head. Eyes small, subcutaneous, in the middle of head, superior, 10·0 in head, 5·0 in snout, 2·5 in interorbital. Mouth inferior, upper jaw slightly longer; gape of mouth 3·0 in head. Maxillary barbels reaching pectoral base, outer mandibulars to gill opening, the inner mandibulars shorter, the nasals to anterior margin of eye. Median longitudinal groove reaching base of occipital process. Occipital process 1·6 times as long as broad, separated from the basal bone of dorsal by a short interspace. The scapular and cubito-humeral processes well developed. Humeral processes nearly reaching pelvics. Teeth villiform in band in jaws; none on palate; no thoracic adhesive apparatus. Rayed dorsal equal to head with a strong spine serrated internally, 1·2 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base, extending opposite to last anal ray; interdorsal 1·7 in adipose dorsal base. Pectorals low, non-plaited, equal to head with a strong flattened spine bearing 14 forwardly directed internal, denticulations and 15 backwardly directed external serrations, reaching beyond pelvic origin. Pelvics non plaited, 1·4 in head; origin below third dorsal ray, just reaching anal origin, equidistant between anal origin and pectoral base. Anal 1·3 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, upper lobe with a filamentous prolongation, 1·8 times head, 3·0 in total length; least height of caudal peduncle 2·3 in its length. Lateral line.

Skin tuberculated; under surface of chest with many glandular pores. Brownish yellow with cross bands below the rayed and adipose dorsals and on caudal peduncle.

It attains 80 mm. in total length; in freshwater.

Distribution.—Burma: Tenasserim, Bassein, Mandalay, Meetan, Indawgyi lake.

384. **Hara hara** (Hamiltan)

1822. *Pimelodus hara* Hamilton, *Fish. Ganges*, pp. 190, 378 (type locality: Kosi R.).

1860. *Hara buchanani* Blyth, *J. As. Soc. Bengal*, 29, p. 151.

1864. *Hara buchanani* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 189.

1869. *Hara buchanani* Day, *Proc. zool Soc. Lond.*, p. 369 (Orissa).

1877. *Erethistes hara* Day (*partim*), *Fish. India*, p. 452, pl. 102, fig. 1.

1889. *Erethistes hara* Day, (*partim*), *Fauna Brit. India*, Fish., 1, p. 205, fig. 74.

1889. *Erethistes conta* (*nec.* Hamilton) Day, *Fauna Brit. India*, Fish., 1, p. 205.

1929. *Pimelodus hara* Hora, *Mem. Indian. Mus.* 9, pl. 21, fig. 5 (Hamilton's drawing reproduced).

1938. *Erethistes hara* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.* 3, pp. 7, 99, text-fig. 100, *nec.* fig. 101.

1947. *Erethistes hara* Chauhan, *Rec. Indian Mus.*, 45, p. 276 (Tel R., Patna State, Orissa).

1950. *Hara hara* Hora, (*partim*), *Rec. Indian Mus.*, 47, p. 200, pl. 2, figs. 1-3 (Kudal Darh, Patna State, Orissa; Lucknow; Terai Duars; Sadiya, Assam).

Vernacular names.—INDIA : *Kutakanti*, *Kurkati*, Bengali ; *Rakheli*, Mechi; *Na palthong*, Rabha.

D. 2/6/0; P. 1/6; V. 6; A. 10-11(3/7-8); C. 15.

Body moderately elongate, flattened ventrally. Head depressed, flattened ventrally, broadly conical, 4·3; depth 5·0 in total length (3·4 and 3·9 in standard length). Snout depressed, bluntly pointed, 2·0 in head. Eyes small, subcutaneous, superior, in the posterior half of head, 9·0 in head, 4·5 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer, lips papillated. Maxillary barbels reaching gill openings, outer and inner mandibulars shorter, the nasals to anterior border of eye. Median longitudinal groove not reaching base of occipital process. Occipital process twice as long as broad, separated from the much dilated basal bone of dorsal by a short interspace. Scapular and cubito-humeral processes well developed, humeral processes extending nearly to pelvics. Teeth villiform, in band in both jaws; none on palate. No thoracic adhesive apparatus. Rayed dorsal 1·1 in head, with a strong spine, serrated internally; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 2·0 in rayed dorsal, extending an eye diameter behind last anal ray; interdorsal 1·5 in adipose dorsal base. Pectorals low, non-plaited, 1·1 times head, with a strong flattened spine bearing forwardly directed internal denticulations and backwardly directed external serrations. Pelvics non-plaited, 1·7 in head; origin below serrated dorsal spine, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin opposite last dorsal ray, nearer to pelvic origin than to caudal base. Caudal deeply lunate, upper lobe longer, 1·0 in head, 4·3 in total length; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin tuberculated; under surface of chest with numerous glandular pores; head rugose. Yellowish brown with broad cross bands, one below rayed dorsal another below adipose dorsal and one on caudal peduncle and another on caudal base; fins with cross bands.

It attains 135 mm. in length; in freshwater.

Distribution.—India : Lucknow, U. P., Terai & Duars, northern Bengal, Sadiya, Assam, Kudal Darh, Orissa. Nepal: Kosi river.

385. **Hara horai** sp. nov.*

(Pl. IX, figs. 1-3)

1950. *Hara hara* (*nec*. Hamilton) Hora (*partim*), *Rec. Indian Mus.*, 47, p. 200, pl. 2, figs. 1-3 (type locality : Terai & Duars, N. Bengal; collected by G. E. Shaw & E. O. Shebbeare; type in the Zoological Survey of India, Calcutta).

D. 2/6/0; P. 1/6; V. 6; A. 10(2/8); C. 17

Body stumpy, ventrally flattened. Head depressed, ventrally flattened, 1·1 times broader than long, 4·1; depth 4·1 in total length (3·3 and 3·3 in standard length). Snout depressed, broadly conical, 1·9 in head. Eyes small, superior, subcutaneous, in posterior half of head, 9·0 in head, 5·0 in snout, 3·0 in interorbital. Mouth inferior, upper jaw slightly longer; gape 3·0 in width of head; lips papillated. Maxillary barbels with broad bases, reaching pectoral base, outer mandibulars to gill openings, inner mandibulars shorter, nasals to the anterior margin of eye. Median longitudinal groove not reaching the base of occipital process. Occipital process 1·5 times as long as broad, separated from the expanded basal bone of dorsal by a short interspace. Scapular and humerocubital processes well developed, humeral processes reaching nearly to pelvic base. Teeth villiform, in band in jaws; palate edentulous. No thoracic adhesive apparatus. Rayed dorsal equal to head, with a strong spine serrated internally; origin nearer to adipose dorsal origin

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*The author has inadvertently not designated any type for this new taxon. The new species is probably based on Hora's (*Rec. Indian Mus.*, 47, 1950, p. 200, pl. 2, figs. 1-3) figured example of *Hara hara* (Ham.) bearing regd. no. F11390/1 which is, however, unfortunately, not traceable in the Zoological Survey of India collections-Ed.

than to snout end; adipose dorsal base 1·6 in rayed dorsal base, extending opposite to last anal ray; interdorsal equal to adipose dorsal base. Pectorals low, horizontal, non-plaited, just reaching pelvics, equal to head, with a strong flattened spine, bearing 16 forwardly directed strong denticulations and 23 backwardly directed serrations. Pelvics non-plaited, reaching anal origin, 1·6 in head; origin below third dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin an eye diameter before adipose dorsal origin. Caudal forked, lower lobe longer, 1·2 in head, 4·8 in total length; least height of caudal peduncle 2·1 in its length. Lateral line.

Skin profusely tuberculated, surface of chest with glandular pores. Greyish yellow with faint cross bands on body; anal and caudal with cross bands.

It attains 79·6 mm. in length; in freshwater.

Distribution.—India : Terai Duars, northern Bengal.

386. **Hara jerdoni** Day

(Pl. IX, figs. 4-6)

1870. *Hara jerdoni* Day, *J. As. Soc. Bengal*, **39**, p. 39 (type locality: Sylhet).

1877. *Erethistes jerdoni* Day, *Fish. India*, p. 453, pl. 102, fig. 3.

1889. *Erethistes jerdoni* Day, *Fauna Brit. India*, Fish., **1**, p. 206.

1950. *Hara jerdoni* Hora, *Rec. Indian Mus.*, **47**, p. 202, pl. 2, figs. 7-9 (Jessore Bheels, E. Bengal: Tista R., Jalpaiguri; Sylhet; Mangaldai, Assam; Siripur, Saran, Bihar).

D. 1/5/0; P. 1/6; V. 6; A. 10; C. 12.

Body moderately elongate, flattened ventrally. Head 1·5 times broader than long, conical, flattened ventrally, 3·5—3·7; depth 4·0—4·5 in total length (3·0 and 3·5 in standard length). Snout depressed, bluntly pointed, 2·1 in head, Eyes subcutaneous, superior, in the anterior half of head, 7·5 in head, 3·0 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer, 3·8 in width of head. Maxillary barbels with broad bases, reaching gill openings, outer and inner mandibulars shorter, the nasals equal to eye diameter. Median longitudinal groove reaching the base of occipital process. The occipital process 1·5 times as long as broad, reaching the crescent-shaped basal bone of dorsal. Scapular and cubito-humeral processes well developed, humeral processes extending nearly to pelvic base. Teeth villiform, in band in jaws; no palatine teeth. No thoracic adhesive apparatus. Rayed dorsal 1·5 in head, with a strong spine serrated internally, 2·0 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·5 in rayed dorsal, extending opposite to anal origin; interdorsal equal to adipose dorsal base. Pectorals low, horizontal, non-plaited, 1·7 times head, reaching pelvic origin, with strong flattened spine bearing 9-12 strong internal denticulations directed forwards and 26 small external serrations directed backwards. Pelvics non-plaited, 2·1 in head; origin below middle of interdorsal, nearer to anal origin than to pectoral base. Anal 2·1 in head; origin below end of adipose dorsal base and equidistant between pelvic origin and caudal base. Caudal forked, 1·5 in head, 5·5 in total length, lobes subequal, with outer rays often elongated; least height of caudal peduncle equal to its length. Lateral line.

Skin smooth; under surface of chest with numerous glandular pores. Brownish with irregular cross bands on body; barbels with black and white annulations.

It attains 37 mm. in length; in freshwater.

Distribution.—India: Siripur, Saran, Bihar, Tista river, Jalpaiguri, W. Bengal, Kowpati, Mangaldai, Assam, Bangladesh, Jessore, Bheels, Sylhet.

163. Genus **Laguvia** Hora

1921. *Laguvia* Hora, *Rec. Indian Mus.*, 22. p. 839 (type, *Pimelodus asperus* Mc Clell., orthotypic).

Body moderately elongate, subcylindrical. Head slightly depressed. Snout broad, slightly depressed. Mouth inferior, transverse; upper jaw slightly longer, with thick lips. Nostrils close together, separated by a flap bearing nasal barbel. Eyes small, superior, subcutaneous. 8 short barbels, maxillaries broad based, not extending beyond middle of pectorals, with alternate black and white annulations. Teeth in villiform band in jaws; none on palate. Gill openings wide. Gill membranes confluent with skin of isthmus. Chest or thorax not much flattened, with a poorly developed adhesive apparatus composed of longitudinal plaits of skin. A short median longitudinal groove on head. Occipital process reaching basal bone of dorsal. Cubito-humeral and scapular processes prominent. A rayed dorsal with a strong serrated or entire spine. A short adipose dorsal above anal, with interdorsal space. Pectorals non-plaited. Pelvics with 9-10 rays, non-plaited. A short anal below adipose dorsal. Caudal forked or semicircular. Lateral line. Skin mostly smooth; cubito-humeral, scapular and occipital regions tuberculated. Air bladder of 2 chambers, partially enclosed in bone.

Distribution.—India, Nepal, Burma, Chusan, China.

The genus **Laguvia** is represented by three species in the Indian region.

Key to species of genus **Laguvia** Hora

1. Pelvic origin entirely behind dorsal base; dorsal spine serrated on inner edge only	*L. asperus*
2. Pelvic origin below 5th or opposite last dorsal ray ; dorsal spine smooth along both edges or finely serrated on both edges.	3
3. Pelvic origin nearer to caudal base than to snout end, below 5th dorsal ray; dorsal spine almost smooth along both the edges ; anal origin opposite adipose dorsal origin ; least height of caudal peduncle 1·4 in its length	*L. ribeiroi*
4. Pelvic origin midway between snout end and caudal base, opposite last dorsal ray ; dorsal spine finely serrated externally and along the upper third internally ; anal origin about an eye diameter before adipose dorsal origin ; least height of caudal peduncle 1·7 in its length .	*L. shawi*

387. **Laguvia asperus** (Mc Clelland)

(Pl. IX, figs. 7-9)

1844. *Pimelodus asperus* Mc Clelland, *Calcutta J. nat. Hist. Art. Sci.*, **4**, p. 404, pl. 24, fig. 2 (type locality : Chusan, China).

1864. *Hara aspera* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 189.

1873. *Hara aspera* Bleeker, *Ned. Tijds. Dierk.*, **4**, p. 125.

1919. *Erethistes asperus* Chaudhuri, *Rec. Indian Mus.*, **16**, p. 276, pl. 22, fig. 2, 2a, 2b [(Tanja, Upper Burma (N. Frontier).]

1921. *Pimelodus asperus* Hora, *Rec. Indian Mus.*, **22**, p. 740.

D. 2/9/0; P. 1/7; V. 1/7; A. 19.

Body subcylindrical, subterete. Head depressed, short, broad, 3·5; depth 3·5 in total length (3·3—3·1 and 3·3—3·1 in standard length). Snout 1·6—1·8 in head. Eyes small, subcutaneous, in the middle of head, 8·0 in head, 4·0 in snout; interorbital 1·5—1·6 in snout. Mouth inferior; lip lobate, reflected, spreading continuously round the mouth forming a broad flat sucker. Nostrils nearer snout end than to anterior margin of eye; anterior nostrils round, terminating in a funnel-like structure, the posterior slit-like. Maxillary barbels with broad bases and with brown and white annulations, reaching pectoral base; outer and inner mandibulars short and white; nasals not reaching anterior margin of eye. Median longitudinal groove on head reaching hind border of eye. Occipital process reaching basal bone of dorsal. Teeth villiform in band in jaws; palate edentulous. A poorly developed thoracic adhesive apparatus, 1·8 times as long as broad. Rayed dorsal 1·2 in depth of body, with a spine smooth externally and serrated internally, *1·6—1·8 in head; origin nearer to adipose dorsal* origin than to snout end; adipose dorsal base 1·3 times rayed dorsal base, extending an eye diameter behind last anal ray; interdorsal equal to rayed dorsal base and 1·3 in adipose dorsal base. Pectorals non-plaited, 1·0—1·1 times head length, above pelvic level, not reaching pelvic, with a strong flattened spine serrated on both edges. Pelvics 1·5—1·6 in head, not just reaching anal, non-plaited; origin an eye diameter behind last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·7 in head; origin an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal slightly forked, with pointed lobes, lower slightly longer, 1·2 in head, 4·2 in total length; least height of caudal peduncle 1·5 in its length. Lateral line.

Skin smooth; 4 or 5 bony tubercles near gill openings below dorsal spine; head, scapular and cubito-humeral processes corrugated. Dark brown with 2 white broad transverse stripes of white blotches; the anterior one at the end of dorsal fin, the posterior one near the caudal base; pectorals and pelvics grey with black blotches; caudal greyish brown.

It attains 44 mm. in length; in fresh water.

Distribution.—Burma : Tanja, Upper Burma (Northern frontier).—Chusan, Korea; in the latitudinal and longitudinal range of 28°N., 98°E. in Burma and 35°N., 128°E. in Korea.

388. **Laguvia ribeiroi** Hora

(Pl. X, fig. 1)

1921. *Laguvia ribeiroi* Hora, *Rec. Indian Mus.*, **22**, p. 741, pl. 29, fig. 3 (type locality: Khoila R., a tributary of the Tista at Jalpaiguri in the Darjeeling Dt., type in the Zoological Survey of India, Calcutta).

1938. *Laguvia ribeiroi* Hora, *Rec. Indian Mus.*, **40**, p. 179, text-fig., 5, a, b (Rajmahal Hills, Santal Parganas).

1938. *Laguvia ribeiroi* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** p. 104, text-fig. 106; its size was 1¼ inches in length).

1941. *Laguvia ribeiroi* Hora & Nair, *Rec. Indian Mus.*, **43**, p. 372 (Hoshangabad Dt.)

1949. *Laguvia ribeiroi* Hora, *J. zool. Soc. India*, **1**, p. 2 (Rihand R. at Pipri, Mirzapur Dt.)

1954. *Glyptothorax ribeiroi* Menon, *Rec. Indian Mus.*, **52**, p. 40 (Khoila R., Mosal R., Kamala R., Kosi R., Nepal, Duars and Terai; Rihand R.).

D. 2/5-6/0; P. 1/7; V. 1/5; A. 1/8; C. 17.

Body subcylindrical, subterete. Head depressed, short, broad, 4·2; depth 5·4 in total length (3·7 and 4·3 in standard length). Snout 2·0 in head. Eyes small, subcutaneous, in the middle of head, 7·5 in head, 3·7 in snout; interorbital 1·4 in snout. Mouth inferior, with thick lips. Nostrils nearer snout end than to anterior margin of eye. Maxillary barbels with broad bases and dark annulations, reaching the pectoral base, outer and inner mandibulars shorter with dark annulations, the nasals not reaching anterior margin of eyes. A median longitudinal groove on head reaching hind border of eye. The occipital process reaching basal bone of dorsal. Teeth in villiform band in jaws; palate edentulous. A poorly developed, V-shapped thoracic apparatus 1·7 times as long as broad. Rayed dorsal shorter than depth of body, with a strong spine, 1·4 in head, serrated externally and denticulated posteriorly at its upper portion; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to dorsal, extending half eye diameter behind last anal ray; interdorsal 1·0—1·1 times adipose dorsal. Pectorals non-plaited 1·1 in head, just reaching pelvics, above pelvic level, with a strong flat spine, 1·2 in head, serrated externally, denticulated internally with 8 curved spines. Pelvics not reaching anal, 1·7 in head, non-plaited; origin nearly below 5th dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked or semicircular, with pointed lobes, lower slightly longer, 1·2 times head, 4·0 in total length; least height of caudal peduncle 1·4 in its length. Lateral line.

Skin mostly smooth; number of bony tubercles behind gill openings in a horizontal line; head scapular and cubito-humeral processes corrugated. Dark grey above becoming dull below speckled with black dots; 2 broad yellowish transverse bands on body, the anterior one between rayed and adipose dorsal, the posterior one below, hind half of adipose dorsal base; adipose dorsal dusky, other fins distinctly banded.

It attains 31·3 mm. in length; in freshwater.

Distribution.—India : Midkulnallah, Harda, Hoshangabad Dt., M.P., Rihand river, Pipri, Mirzapur Dt., U. P., Mosal and Kamala rivers, Rajmahal hills, Bihar, Khoila river, tributary of Tista river, Darjeeling Dt., W. Bengal. Nepal: the Kosi river.

389. **Laguvia shawi** Hora

(Pl. X, fig. 2)

1921. *Laguvia shawi* Hora, *Rec. Indian Mus.*, 22, p. 740, pl. 29, fig. 2 (type locality : Mahananda R., Sivoke R., ; type in the Zoological Survey of India, Calcutta).

1938. ***Laguvia shawi*** Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, pp. 7, 105, text-fig. 107 (Sivoke R., and various streams near Siliguri.)

1941. ***Laguvia shawi*** Hora & Gupta, *J. roy. As Soc. Bengal, Sci.*, **6**, p. 80 (Kalimpong Duars and Siliguri Terai).

1954. *Glyptothorax shawi* Menon, *Rec. Indian Mus.*, **52,** p. 41 (Mahananda River, Darjeeling Himalayas, Siliguri, N. Bengal, Kalimpong Duars and Silliguri Terai, Tista river drainage).

D. 2/5-6/0; P. 17; V 1/5; A. 1/9; C. 17.

Body subcylindrical, subterete. Head slightly depressed, short, broad, 5·0; depth 5·1 in total length (4·0 and 4·2 in standard length). Snout 2·0 in head. Eyes small, superior, subcutaneous, in the posterior half of head, 8·0 in head, 4·0 in snout, interorbital 1·6 in snout. Mouth inferior, transverse, upper jaw longer. Nostrils equidistant between snout end and the anterior margin of eye. Maxillary barbels broad based, reaching pectoral base, with dark annulations outer mandibulars with dark annulations, reaching gill openings, the inner mandibulars with dark annulations reaching hind border of eye, the nasals reaching midorbit. A median longitudinal groove on head reaching midorbit. Occipital process reaching basal bone of dorsal. Teeth in villiform, crescentic band in jaws; palate edentulous. A poorly developed thoracic adhesive apparatus. Rayed dorsal less than depth of body with a strong entire spine, 1·9 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1 1 in rayed dorsal base, extending one eye diameter behind last anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals above pelvic level, non-plaited, 1 1 times head, reaching pelvics, with a strong flat spine, 1·0 in head, serrated externally, denticulated internally with 7 curved spines. Pelvics reaching anal origin, 1·5 in head; origin just opposite last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·3 in head; origin about an eye diameter before adipose dorsal origin, much nearer to pelvic origin than to caudal base. Caudal lunate or semi-circular, 1.1 times head, 4.6 in total length, lobes pointed, subequal; least height of caudal peduncle 1·7 in its length. Lateral line.

Skin mostly smooth; occipital, cubito-humeral, scapular finely tuberculated. Dark greyish yellow above, white below, with 2 broad cross bands, of close-set minute dots, the anterior one below rayed dorsal, the posterior one below adipose dorsal; indistinct transverse bands on fins.

It attains 30 mm. in length; in freshwater.

Distribution.—India : Mahananda and Sivoke rivers, Darjeeling Himalayas, Kalimpong Duars and Siliguri Terai, W. Bengal.

164. Genus **Pseudolaguvia** nov.

Body moderately elongate, subcylindrical. Head depressed, longer than broad, broader than deep. Snout obtuse, slightly depressed. Mouth inferior, transverse; lips thick, fleshy, papillated. Nostrils close together, separated by a flap bearing nasal barbel. Eyes subcutaneous, small, superior, in the posterior half of head, 8 short barbels; maxillary and mandibular ones annulated, none reaching beyond pectoral base. Teeth villiform in band in jaws; none on palate. Gill openings wide, gill membranes confluent with skin of isthmus. Chest or thorax not much flattened. A well developed adhesive apparatus much longer than broad with an elongated depression medianly. A shallow median longitudinal groove on head reaching base of occipital process. Occipital process reaching the basal bone of dorsal. Cubito-humeral processes conspicuous. Rayed dorsal with a strong spine serrated internally. Adipose dorsal longer than rayed dorsal, without interdorsal-space. Pectorals above pelvic level, horizontal, non-plaited, with a strong flat spine, serrated internally, roughened externally. Pelvics non-plaited, with 6 rays, origin below last dorsal ray. A short anal below adipose dorsal. Caudal forked. Skin rough with minute tubercles. Air bladder enclosed in bone.

Genotype.—**Glyptothorax tuberculatus** Prashad & Mukerji.

Remarks. The genus differs from other closely allied genera of family SISORIDAE, viz., **Erethistes** Müller & Troschel, **Erethistoides** Hora, **Conta** Hora, **Hara** Blyth, **Glyptothorax** Blyth and **Laguvia** Hora in the following remarkable characters :

1. A well developed thoracic adhesive apparatus which is considerably longer than broad with an elongated depression in the middle.
2. A contiguous adipose dorsal fin with the rayed dorsal fin.

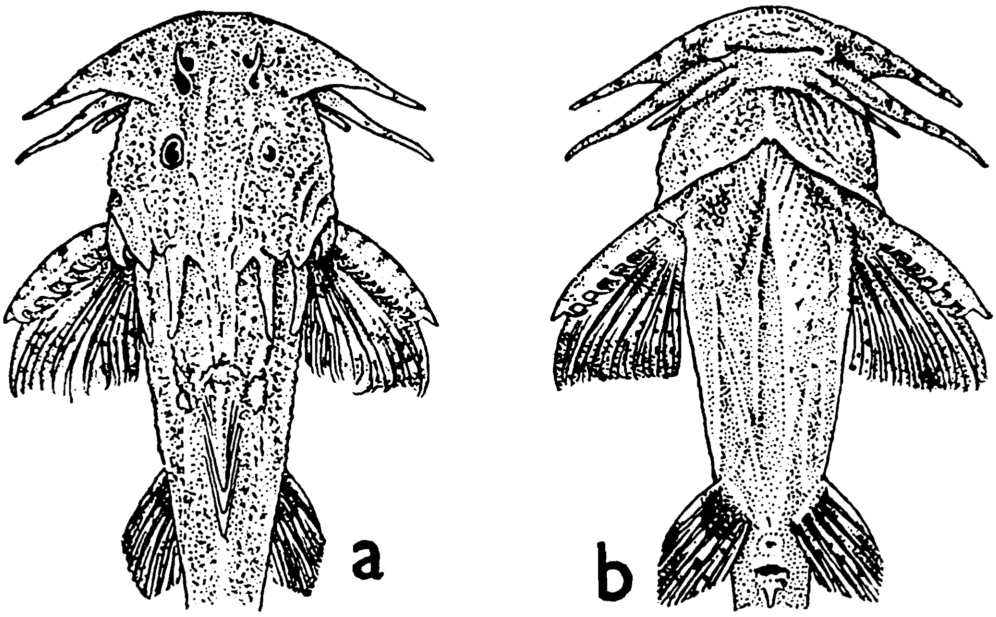
Distribution.—Burma.

390. **Pseudolaguvia tuberculatus** (Prashad & Mukerji)

(Text-fig. 45)

1929. *Glyptothorax tuberculatus* Prashad & Mukherji *Rec. Indian Mus.*, **31**, p. 182, pl. 7, fig. 2, text-fig. 4 (Sankha, a hillstream midway between Kamaing and Mongaung, Myitkyina Dt., U. Burma).

1954. *Glyptothorax tuberculatus* Menon, *Rec. Indian Mus.*, 52, p. 41.



TEXT-FIG. 45.—*Pseudolaguvia tuberculatus* (Prashad & Mukerji) (*a*) Dorsal view of head and anterior part of body (*b*) Ventral view of head and anterior part of body (After B. Prashad & D.D. Mukerji)

B. 6; D. 1/6/0; P. 1/7; V. 1/5; A. 2/8; C. 20.

Body moderately elongate, subcylindrical. Head longer than broad, broader than deep, 4·1; depth 5·2 in total length (3·3 and 4·3 in the standard length). Snout broadly rounded anteriorly, 1·8 in head. Eyes small, superior, subcutaneous, in the posterior half of head, 9·0 in head, 5·0 in snout, 2·5 in interorbital. Mouth inferior, transverse, upper jaw longer; upper lip thick and flesh. Maxillary barbels annulated, much flattened at bases, not extending much beyond posterior end of orbit, outer mandibulars annulated, equal to maxillary barbels, the inner mandibulars annulated, 1·5 in outer mandibulars, the nasals 1·5 times eye diameter. A median longitudinal groove on head, shallow, prominent, reaching the base of occipital process. The occipital process three times as long as broad, reaching the basal bone of dorsal. The humero-cubital process with elongated osseous projection posteriorly, a scapular projection above lateral line between humero-cubital and occipital processes. Teeth villiform in jaws; palate edentulous. A well developed thoracic adhesive apparatus considerably longer than broad, with an elongated depression in its middle. Rayed dorsal 1·5 in head, 1·1 in depth of body, with a strong spine equal to head minus snout; nearer to adipose dorsal origin than to snout end; adipose dorsal base 2·2 times rayed dorsal base extending about half an eye diameter behind last anal ray; no interdorsal space. Pectorals 1·6 on head, 1·0 in rayed dorsal, above level of pelvic base, horizontal, non-plaited ventrally, not reaching pelvics, with a strong flat spine with 7 curved internal denticulations. Pelvics 2·2 in head reaching anal origin; origin opposite just below end of rayed dorsal base and adipose dorsal origin, much nearer to anal origin than to pectoral base. Anal 1·6 in head; origin below middle of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal deeply furcate, 1·0 in head, 4·7 in total length, lobes subequal, least height of caudal peduncle 1·8 in its length. Lateral line.

Skin rough with minute tubercles. Dark brown variegated with irregular patches; chest and lower part of head dirty white; maxillary and mandibular barbels with black and white annulations; fins blackish with broad whitish vertical bands.

It attains 38 mm. in length; in freshwater.

Distribution.—Burma : Sankha, a hill stream, Myitkyina Dt., U. Burma.

165. Genus **Glyptothorax** Blyth

1860. *Glyptothorax* Blyth, *J. As. Soc. Bengal,* **29**, p. 154 (type *G. trilineatus* Blyth, orthotypic).

1863. *Aclyptosternon* Bleeker, *Nat. Tijds. Dierk.*, **1**, p. 103 (type, *Silurus cous* L.).

1864. *Euclyptosternum* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 183 (type *E. coum* (L.), orthotypic).

Body elongate, subterete. Head greatly depressed, covered with smooth skin. Snout depressed, broad. Mouth inferior, transverse, with thick lips often papillated for adhesion, upper jaw slightly longer. Nostrils nearer to snout than to anterior edge of eye, close together, separated by a flap bearing nasal barbel. Eyes small, superior, subcutaneous, not wide apart. 8 short barbels, maxillary longer with broad bases, not extending beyond middle of pectorals. Teeth villiform in crescentic band in jaws; palate edentulous. Gill openings wide, gill membranes confluent with skin of isthmus. Chest or thorax flattened, with U or V-shaped adhesive apparatus composed of longitudinal plaits of skin. No median longitudinal groove on head. Cubito-humeral and scapular processes not prominent. Rayed dorsal with a weak or strong spine. A short adipose dorsal above anal with interdorsal space. Pectorals low, plaited or non-plaited, horizontal, with a strong broad spine sharply denticulated internally. Pelvics with 6 rays, plaited or non-plaited, behind rayed dorsal. Anal short, opposite adipose dorsal. Anal papilla present or absent. Caudal forked. Lateral line. Branchiostegals 6—10. Air-bladder in two lateral chambers partially or wholly enclosed in a bony capsule.

Distribution.—Syria, Pakistan, India, Nepal, Burma, Malaya, Thailand, Laos, Sumatra, Java, Borneo, China.

The genus **Glyptothorax** is represented by 21 species in the Indian region.

Key to species and subspecies of genus **Glyptothorax** Blyth*

1. Thoracic adhesive apparatus with a deep central pit .	3
2. Thoracic adhesive apparatus without a deep central pit	5
3. Skin smooth; rayed dorsal origin nearer to adipose dorsal origin than to snout end	*G. cavia*
4. Skin profusely granulated ; rayed dorsal origin midway between adipose dorsal origin and snout end	*G. kashmirensis*
5. Adhesive apparatus rhomboidal in thoracic region, extending lip wards traversing the gill membrane	*G. horai*

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*Tilak (1970, *J. Inland Fish. Soc. India,* **1**, p. 37) described a new species, *G. garhwali* from Uttar Pradesh, and Ganguly, Datta and Sen (1972, Copeia, p. 340) described *G. nelsoni* and *G. coheni* from Ranchi (Bihar).

6.	Adhesive apparatus non-rhomboidal, restricted only to the thoracic region, not extending lipwards	7
7.	Occipital process reaching basal bone of dorsal	9
8.	Occipital process not reaching basal bone of dorsal	29
9.	Skin smooth	11
10.	Skin granulated or rough with tuberculations or denticulations	15
11.	Paired fins plaited ventrally; thoracic adhesive apparatus longer than broad or broader than long	13
12.	Paired fins non-plaited; thoracic adhesive apparatus large, longer than broad	*G. madraspatanum*
13.	Thoracic adhesive apparatus large, longer than broad	*G. stoliczkae*
14.	Thoracic adhesive apparatus small, broader than long	*G. brevipinnis*
15.	Skin granulated, paired fins plaited or non-plaited	17
16.	Skin rough with tuberculations or denticulations; paired fins non-plaited	25
17.	Paired fins non-plaited	*G. trilineatus*
18.	Paired fins plaited	19
19.	Thoracic adhesive apparatus small, as long as broad	*C. pectinopterus*
20.	Thoracic adhesive apparatus large, longer than broad	21
21.	Least height of caudal peduncle 2·0—2·7 in its length	23
22.	Least height of caudal peduncle 1·5 in its length	*G. lonah*
23.	Least height of caudal peduncle 2·0—2·2 in its length; interdorsal 1·4 times adipose dorsal base; snout 2·2 in head	*G. saisii*
24.	Least height of caudal peduncle 2·6—2·7 in its length; interdorsal 2·0 times adipose dorsal base; snout 1·8 in head	*G. annandalei*

25. Skin tuberculated ; pectorals reaching pelvics	*G. gracile*
26. Skin denticulated ; pectorals not reaching pelvics	27
27. Anal origin opposite adipose dorsal origin; caudal 4·2 in total length ; lower lobe the longer	*G. platypogonoides*
28. Anal origin half an eye diameter behind adipose dorsal origin ; caudal 4·7 in total length ; lobes subequal	*G. prashadi*
29. Skin smooth	31
30. Skin tuberculated or denticulated	37
31. Thoracic adhesive apparatus small, broader than long ; paired fins plaited	*G. housei*
32. Thoracic adhesive apparatus longer than broad; paired fins non-plaited	33
33. Dorsal spine serrated ; thoracic adhesive apparatus rhomboidal	*G. sinense*
34. Dorsal spine smooth ; thoracic adhesive apparatus non-rhomboidal ..	35
35. Interdorsal 1·5 times adipose dorsal base ; pelvic origin below last dorsal ray	*G. conirostre conirostre*
36. Interdorsal 1·7 times adipose dorsal base ; pelvic origin 2½ eye diameters behind last dorsal ray	*G. conirostre poonaensis*
37. Body spindle-shaped ; skin denticulated	*G. telchitta*
38. Body not spindle-shaped ; skin tuberculated	39
39. Paired fins plaited ..	*G. striatus*
40. Paired fins non-plaited	*G. trewavasae*

391. **Glyptothorax annandalei** Hora

(Pl. XI, fig. 1)

1923. *Glyptothorax annandalei* Hora, *Rec. Indian Mus.*, **25**, p. 14, pl. 1, fig. 3 (type locality : Nierolay stream, Bhavani R., Nilgiris; type in the Zoological Survey of India, Calcutta).

1938. *Glyptothorax annandalei* Hora, *Rec. Indian Mus.*, **40**, p. 372, text-fig. 3.

1949. *Glyptothorax annandalei* Hora, *J. zool. Soc. India*, **1**, p. 2 (Rihand R., at Dam site, Mirzapur Dt.).

1950. *Glyptothorax annandalei*, A.G.K. Menon, *Rec. Indian Mus.*, **47**, p. 234 (Kosi R., Nepal).

1954. *Glyptothorax annandalei*, M.A.S. Menon, *Rec. Indian Mus.*, **52**, p. 52 (Nilgiris, Madras State; Rihand river, U.P.; Kosi river, Nepal).

B. 6; D. 1/6/0; P. 1/9; V. 1/5; A. 10.

Body elongate, subterete. Head greatly depressed, longer than broad, 5·2; depth 6·8 in total length (4·3 and 5·5 in standard length); under surface papillated. Snout depressed, 1·8 in head. Eyes small, subcutaneous, in the posterior half of head, nearly 17·0 in head, 4·0—5·0 in interorbital. Mouth inferior, upper jaw longer; lips papillated. Maxillary barbels with broad bases, reaching 3rd or 4th pectoral ray, outer mandibulars not reaching gill openings, inner mandibulars to interorbital, nasals not reaching anterior margin of eye. Occipital process reaching the basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without a pit. Rayed dorsal nearly equal to depth of body in adult with a weak entire spine; origin nearer to snout end than to adipose dorsal origin or midway between them; adipose dorsal base equal to rayed dorsal base, extending opposite to last anal ray; interdorsal 2·0 times adipose dorsal base. Pectorals low, horizontal, broad equal to or shorter than head, plaited ventrally with a broad strong spine, entire externally strongly serrated internally, not reaching pelvics. Pelvics plaited ventrally; origin just behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked 1·4 times head, 4·4 in total length, the lower lobe the longer; least height of caudal peduncle 2·6—2·7 in its length. Lateral line.

Skin granulated. Dark grey above becoming lighter below with 2 lighter longitudinal bands, one along lateral line and the other above; adhesive apparatus yellowish, pectorals, adipose base black.

It attains 115·5 mm. in length; in freshwater.

Distribution.—India : Western Ghats, Peninsular India, the Vindhyas, the Rihand, Nepal : Kosi river at Barahakshetra and Tribeni.

392. **Glyptothorax brevipinnis** Hora

(Pl. XI, fig. 2)

1923. *Glyptothorax brevipinnis* Hora, *Rec. Indian Mus.*, **25**, p. 16, pl. 1, fig. 4 (type locality : India, exact place not known; type is in the Zoological Survey of India).

1954. *Glyptothorax brevipinnis* Menon, *Rec. Indian Mus.*, **52**, p. 37.

D. 1/6/0; P. 1/7; V. 6; A. 8.

Body elongate, subterete. Head greatly depressed, as long as broad, 5·2—5·6; depth 6·5—7·2 in total length. Snout depressed, 2·0—2·1 in head (4·6—4·9 and 5·3—6·3 in standard length). Eyes small, subcutaneous, in the posterior half of head, nearly 15·0 in head, 3·0—3·9 in interorbital. Mouth inferior, upper jaw longer. Maxillary barbels with broad bases, reaching pectoral base, outer mandibulars to gill openings, inner mandibulars to anterior margin of the thoracic adhesive apparatus, nasals not reaching anterior margin of eye. Occipital process reaching the basal bone of dorsal. Teeth villiform in crescentic band in jaw; palate edentulous. The thoracic adhesive apparatus broader than long, without pit; not very prominent. Rayed dorsal ¾ as high as body, with a spine, 2·0 in head; origin nearer to snout end than to adipose dorsal origin; adipose dorsal base equal to rayed base, extending beyond last anal ray by 2.0 eye diameters, interdorsal 1·5—2·3 times adipose dorsal base. Pectorals low, horizontal, not reaching pelvics, 1·2 in head, plaited ventrally, with a broad spine serrated internally. Pelvics 1·3—1·5 in head, not reaching anal, plaited ventrally; origin 2 eye diametres behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·2—1·4 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head, 6·4 in total length, lower slightly longer; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Reddish brown above becoming lighter below.

It attains 97 mm. in length; in freshwater.

Distribution.—India.

393. Glyptothorax cavia (Hamilton)

(Pl. XI, figs. 3, 4)

1822. *Pimelodus cavia* Hamilton, *Fish. Ganges*, pp. 188, 378 (type locality : northern rivers of Bengal).

1877. *Glytosternum cavia* Day, *Fish. India*, p. 499 (rivers of northern Bengal).

1877. *Euglyptosternum lineatum* Day, *Fish. India*, p. 500, pl. 116, fig. 7 (type locality : the Jumna : Suddya, Assam; the specimen figured, life-size, was from Jumna; type is in the Zoological Survey of India, Calcutta).

1889. *Euglyptosternum lineatum* Day, *Fauna Brit. India*, Fish., **1**, p. 202, fig. 73.

1923. *Glyptothorax lineatus* Hora, *Rec. Indian Mus.*, **25**, pp. 9, 10, fig. 1a.

1929. *Glyptothorax burmanicus* Prashad & Mukerji, *Rec. Indian Mus.*, **31**, p. 184, fig. pl. 7, fig. 3 (type locality : Sankha R., Myitkyina Dt.; type in the Zoological Survey of India, Calcutta).

1938. *Glyptothorax lineatus* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** (1937), pp. 7 ,102, text-fig. 104 [Small rivers of the Terai (Sivoke) and Duars (Ghish and Chel rivers)]

1948. *Glyptothorax cavia* Hora & Menon, *Rec. Indian Mus.*, **46**, p. 60, pl. 2, fig. 4. 5.

1950. *Glyptothorax cavia* A.G.K. Menon, *Rec. Indian Mus.*, **47**, p. 235 (Kosi R., Nepal).

1954. *Glyptothorax cavia* M.A.S. Menon, *Rec. Indian Mus.*, **52**, p. 34 (Jumna, Sankha river, rivers below Darjeeling, Kosi river, Nepal).

Vernacular name.—INDIA : *Kanya tenggara*, Hindi.

D. 1/6/0; P. 1/8; V. 1/5; A. 2/9; C. 21.

Body elongate, subterete. Head greatly depressed, broadly rounded anteriorly, longer than broad, 4·4; depth 6·6 in total length (3·5—3·7 and 5·4—6·6 in standard length). Snout broadly rounded anteriorly, 1·9 in head. Eyes superior, small, subcutaneous, in the posterior half of head, 10·0—13·5 in head, 5·1—7·5 in snout, 2·5—3·0 in interorbital. Mouth inferior, upper jaw longer; lips papillated. Maxillary barbels with broad bases, reaching slightly beyond pectoral base, outer mandibulars to gill openings, inner mandibulars equal to nasals, nasals equalling the distance between their bases. Occipital process not reaching the basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic apparatus longer than broad, with a pit. Rayed dorsal slightly longer or equal to depth of body, with a strong spine 1·9—2·7 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·3 times rayed dorsal base, extending opposite to last anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals low, horizontal, broad, 1·2 in head, non-plaited ventrally, not reaching pelvics, with a broad strong spine 1·3 in head, serrated internally with 14 denticulations. Pelvics 1·8 in head, not reaching anal; origin 2 eye diameters behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin opposite adipose dorsal origin nearer to pelvic origin than to caudal base. Caudal forked, 1·3 in head, 5·3 in total length; lower lobe the longer; least height of caudal peduncle 2·5—2·8 in its length. Lateral line.

Skin smooth. Brownish grey above, dirty yellow beneath; sides and dorsal mottled with deep coloured spots, often with narrow longitudinal bands on sides.

It attains 165 mm. in length; in freshwater.

Distribution.—India : The Yamuna; the Sivoke, the Ghish and the Chel rivers of Terai and Duars of northern Bengal. Nepal : the Kosi river, Burma : the Sankha river, Myitkyina Dt.

17. **Glyptothorax conirostre conirostre** (Steindachner)

1867. *Glyptosternum conirostre* Steindachner, *Sitz. K. Acad. Wiss. Wien.*, **55**, pt. 1, p. 532, pl. 5, fig. 2; pl. 61, fig. 2 (type locality : Simla, the head waters of the Jumna R.).

1871. *Glyptosternum modestum* Day, *Proc. zool. Soc. Lond.*, p. 714.

1877. *Glyptosternum lonah* Day (*partim*), *Fish. India*, p. 496.

1877. *Glyptosternum conirostre* Day, *Fish. India*, p. 497, pl. 116, fig. 5.

1889. *Glyptosternum lonah* Day (*partim*), *Fauna Brit. India*, Fish,. **1**, p. 196.

1889. *Glyptosternum conirostre* Day, *Fauna Brit. India*, Fish., **1**, p. 198.

1923. *Glyptothorax conirostris* Hora, *Rec. Indian Mus.*, **25**, p·28 (error in spelling)

1931. *Glyptosternum conirostre* Chu, *Biol. Bull. St. John's Univ.*, No. 1, p. 81 (mountain streams running to the Min R., Szechuen).

1943. *Glyptosternum conirostre* Nichols, *Nat. Hist. Central Asia*, **9**, p. 5.

1954. *Glyptothorax conirostre* Menon, *Rec. Indian Mus.*, 52, p. 36 (Simla; Mahananda R., Siliguri).

D. 1/6/0; P. 1/9; V 6; A. 11-12.

Body elongate, subterete. Head greatly depressed, longer than broad, 4·8—5·2; depth 5·5 in total length (3·8 and 4·5 in standard length). Snout depressed, 2·2 in head. Eyes small, subcutaneous, in the posterior half of head, 15·0 in head, 4·0 in interorbital. Mouth inferior, upper jaw longer; lips thin, papillated. Maxillary barbels with broad bases, reaching middle pectorals, outer mandibulars to gill openings, inner mandibulars shorter, nasals with wide fringe, reaching posterior border of eyes. Occipital process not reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without pit. Rayed dorsal as high or slightly higher than body, with a weak entire spine, 1·7 in head; origin nearer to snout end than to adipose dorsal origin; adipose dorsal base nearly equal to rayed dorsal base, extending opposite last anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals low, horizontal, non-plaited, equal to head, nearly reaching pelvics, with a broad spine bearing 13 internal denticulations, serrated externally. Pelvics 1·5 in head, not quite reaching anal; origin below last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·1 in head; origin one eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 4·8 in total length, lobes subequal; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Brownish; fins yellowish stained black.

It attains 133 mm. in length; in freshwater.

Distribution.—India : The Yamuna, near Simla, the Mahananda river Siliguri, northern Bengal.—China; in the latitudinal and longitudinal range of 26° 42′—31° 6′ N., 77° 13′—88° 25′E. in India and 30°N., 108°E.. in the Yangtsekiang in China.

18. **Glyptothorax conirostre poonaensis** Hora

(Pl. XI, figs. 5, 6)

1877. *Glyptosternum lonah* (*nec.* Sykes) Day (*partim*), *Fish. India*, p. 496.

1889. *Glyptosternum lonah* (*nec* Sykes) Day (*partim*), *Fauna Brit. India*, *Fish.*, **1**, p. 196.

1938. *Glyptothorax conirostre var poonaensis* Hora, *Rec. Indian Mus.*, **40**, p. 368, pl. 7, figs. 5, 6 (type locality : Poona; holotype is in the Zoological Survey of India, Calcutta).

1954. *Glyptothorax conirostre poonaensis*, Menon, *Rec. Indian Mus.*, **52**, p. 36 (Moola Mutha R., Poona).

Vernacular name.—INDIA : *Phathar chatoo*, Poona.

D. 1/6/0; P. 1/9; V. 6; A. 10; C. 17.

Body elongate, subterete. Head greatly depressed, longer than broad, 4·8—5·4; depth 6·8—8·6 in total length (4·2 and 5·6—7·0 in standard length). Snout depressed, 2·1 in head. Eyes small, subcutaneous, in the posterior half of head, 16·0 in head, 3·0 in interorbital. Mouth inferior; lips thin papillated, upper jaw longer. Maxillary barbels with broad bases, reaching middle of pectorals, outer mandibulars to pectoral base, inner mandibulars to gill openings, nasals to anterior margin of eye. Occipital process not reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without pit. Rayed dorsal slightly higher than body, with a strong entire spine, 1·9 in head; origin nearly equidistant between snout end and adipose dorsal origin; adipose dorsal base equal to rayed dorsal base, extending opposite to last anal ray; interdorsal 1·7 times adipose dorsal base. Pectorals low, horizontal, non-plaited, not reaching pelvics, 1·0—1·2 in head, with a strong broad spine bearing 15 internal denticulations, roughened externally. Pelvics 1·4—1·6 in head, not reaching anal; origin 2½ eye diameters behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·4—1·7 in head; origin nearly opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 4·8 in total length, lobes subequal; least height of caudal peduncle 1·9—2·2 in its length. Lateral line.

Skin smooth. Light dusky above, dirty white below; minute black dots over head and body.

It attains 81 mm. in length; in freshwater.

Distribution.—India : Moola Mutha R., Poona, Maharashtra.

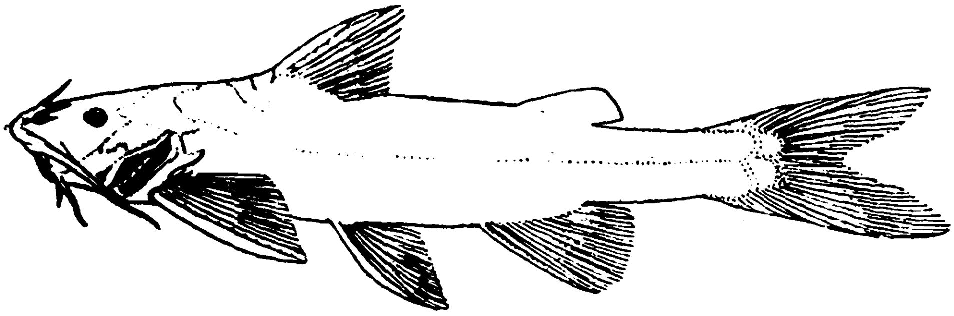
394. Glyptothorax gracile Günther

(Text-fig. 46)

1864. *Glyptosternum gracile* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 186 (type locality : Nepal; type in the British Museum, London).

1923. *Glyptothorax gracilis* Hora, *Rec. Indian Mus.*, **25**, p. 25, text-fig. 4 (error in spelling).

1954. *Glyptothorax gracile* Menon, *Rec. Indian Mus.*, **52**, p. 48 (Rangit river, Manjhitar, Sikkim).



TEXT-FIG. 46.—*Glyptothorax gracile* Gthr. (After S. L. Hora)

D. 1/6/0; P. 1/10; V 1/5; A. 14.

Body elongate, subterete. Head greatly depressed, longer than broad, 4·8—5·2; depth 6·2 in total length (3·9—4·5 and 5·2 in standard length). Snout depressed, 3·5 in head. Eyes small, superior, subcutaneous in the posterior half of head, 14·0 in head, 3·5 in interorbital. Mouth inferior, upper jaw longer; lips non-papillated. Maxillary barbels with broad bases, reaching middle of pectorals, outer mandibulars to gill openings, inner ones shorter, nasals not reaching anterior margin of eye. Occipital narrow, slender, 4 times as broad as long, reaching basal bone of dorsal. Teeth villiform, in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without pit. Rayed dorsal much higher than the depth of body, with a strong serrated spine 4/5 the head; origin nearer to adipose dorsal than to snout end; adipose dorsal base 1 1 times rayed dorsal base; inter-dorsal 1·6 times adipose dorsal base, extending an eye diameter behind last anal ray. Pectorals low, horizontal, non-plaited, reaching to pelvics, with a broad spine, 1·1 in head, with 10 internal denticulations. Pelvics not reaching anal, 1·3 in head; origin opposite last dorsal ray. Anal 1·3 in head; origin an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 times head, 4·3 in total length, lower lobe longer; least height of caudal peduncle 2·0—2·5 its length. Lateral line.

Skin rough. Brownish, fins light coloured.

It attains 127 mm. in length; in freshwater.

Distribution.—India : Sikkim. Nepal.

395. **Glyptothorax horai** Shaw & Shebbeare

1937. *Glyptothorax horai* Shaw & Shebbeare, *J. Bombay nat. Hits. Soc.*, **39,** p. 188 (type locality : streams of Terai, W. Bengal; type is in the Zoological Survey of India, Calcutta.)

1938. *Glyptothorax horai* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** p. 101, text-fig. 103.

1949. *Glyptothorax horai* Hora, *J. zool. Soc. India*, **1**, p. 2 (Rihand R., near Dam site, Mirzapur Dt.).

1950. *Glyptothorax horai* A.G.K. Menon, *Rec. Indian Mus.*, **47,** p. 235 (Kosi R., Nepal).

1954. *Glyptothorax horai* M.A.S. Menon, *Rec. Indian Mus.*, **52,** p. 37 (Streams of Terai, W. Bengal; Rihand R., Kosi R.).

Vernacular name.—NEPAL : *Kala Kabri.*

D. 1/5-6/0; P. 1/7-9; V. 1/5; A. 1/9-10; C. 16-18.

Body elongate, subterete. Head depressed, flattened broadly, pointed anteriorly, 4·5—4·8; depth 5·2—5·8 in total length (3·4—3·9 and 4·5—5·1 in standard length). Snout 3·0—2·3 in head. Eyes small, subcutaneous, superior, 13-18 in head, 6·8 in snout, 3·3—3·7 in interorbital. Mouth inferior, horizontal, upper jaw longer; lips papillated. Maxillary barbel extending beyond the pectoral base, outer mandibulars to pectoral base, inner mandibulars half of the length of the outer mandibulars, the nasals to postorbit. Occipital process 3 times as long as broad, not reaching the basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The adhesive apparatus, extending from the lip traversing the gill membranes to half way down the pectoral bases, without pit, rhomboidal in thoracic region anteriorly and vignitted posteriorly. Rayed dorsal higher than depth of body in juvenile, shorter in adult, with a strong spine 2·0 in head, denticulated internally; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·2 times rayed dorsal base, extending nearly opposite to last anal ray; interdorsal 1·7 times adipose dorsal base.

Pectorals low, horizontal, non-plaited ventrally, 1·3 in head, not reaching pelvics, with a broad spine 1·9—2·0 in head, with 8 or 9 internal denticulations. Pelvics 2·0 in head, not reaching anal, non-plaited ventrally; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·4 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head, 4·7 in total length, lower lobe slightly longer; least height of caudal peduncle 2·0—2·3 in its length. Lateral line.

Skin smooth. Brownish yellow with a dark humeral spot; anal and caudal darker at base and top.

It attains 110 mm. in length : in freshwater.

Distribution.—India : The Rihand river, Mirzapur Dt., U.P., streams of Terai, northern Bengal. Nepal : the Kosi river at Chhatra and Barahakshetra.

396. **Glyptothorax housei** Herre

1942. *Glyptothorax housei* Herre, *Standford Ichth. Bull.*, **2,** No. 4, p. 117 (type locality : rapids in a mountain stream, Anamallai Hills, Puthutotam estate, 4 miles east of Valpari, Pollachi Dt., S. India, alt. approximately 3600 ft., collected by Dr. A.W. Herre on 10-1-1941)

1954. *Glyptothorax housei* Menon, *Rec. Indian Mus.*, **52,** p. 29.

D. 1/5/0; P. 1/9; V. 1/5; A. 2/10.

Body elongate, subterete. Head depressed, width 4/5 of its length, 3·9—4·1; depth 6·2—6·4 in standard length. Snout 2·1 in head, moderately depressed. Eyes small, subcutaneous, superior, 12·5—13·6 in head, 5·7—6·3 in snout, 3·7—4·2 in the cancave interorbital. Mouth inferior, gape equalling half width of head, upper jaw longer; lips papillated. Maxillary barbels with broad bases, reaching slightly beyond pectoral base, outer mandibulars to pectoral base, inner mandibulars much shorter to gill openings, nasals to middle or slightly beyond orbit. The occipital process 6 times as long as broad, not reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus broader than long, without a central pit. Rayed dorsal less than depth of body in adult, with a smooth spine; origin about midway between snout end and anal origin; adipose dorsal base 2·0—2·4 in interdorsal. Pectorals plaited ventrally, shorter than head, with a broad strong spine serrated internally. Pelvics plaited ventrally, shorter than head, not reaching anal. Anal more than 2·0 in head, below or before adipose dorsal origin. Caudal forked, 1·5 in head, lower lobe longer. Lateral line.

Skin smooth. Reddish, with yellow and dusky mottlings above and flesh colour below.

It attains 103 mm.; in freshwater.

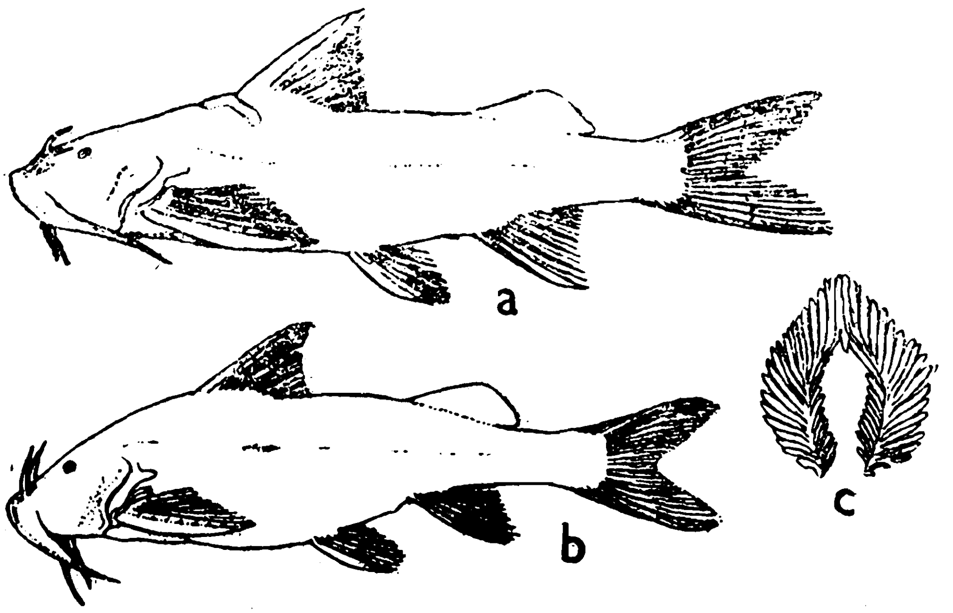
Distribution.—India : Annamalai Hills, Western Ghats, Kerala.

397. **Glyptothorax kashmirensis** Hora
(Text-fig. 47)

1923. *Glyptothorax kashmirensis* Hora, *Rec. Indian Mus.*, **25**, p.22 text. fig. 2 (type locality : Kashmir valley : type is in the Zoological Survey of India, Calcutta).

1936. *Glyptothorax kashmirensis* Mukerji, *Mem. Conn. Acad.*, p. 10, art. 18, p. 326 (Jhelum R., Shadipur, *ca* 5192 ft., 2 specimens, 98 and 85 mm. in length).

1954. *Glyptothorax kashmirensis* Menon, *Rec. Indian Mus.*, **52**, p. 52 (Kashmir valley, streams round Ichabal, Kashmir, hill streams Chamba State, Punjab, Jhelum river, Shadipur, Kashmir).



TEXT-FIG. 47.—*Glyptothorax kashmirensis* Hora (*a*) Lateral view of specimen (*b*) Lateral view of specimen (*c*) Thoracic adhesive apparatus. (After S. L. Hora)

D. 1/5/0; P. 1/8-9; V. 6; A. 2/6.

Body elongate, subterete. Head depressed, slightly longer than broad, 5·5—6·1; depth 5·4—6·7 in total length (3·9—5·2 and 4·6—5·7 in standard length). Snout 2·2 in head. Eyes small, superior, subcutaneous, in the posterior half of head, 10·0—11·2 in head, 4·0 in snout, about 3·0 in interorbital. Mouth inferior, upper jaw longer; lips near the bases of maxillary barbels papillated. Maxillary barbels reaching beyond pectoral base, the outer mandibulars to pectoral base, inner mandibulars slightly shorter than the gape of mouth, the nasals to the anterior margin of eye. The occipital process not reaching basal bone of dorsal. Teeth in villiform crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus slightly longer than broad with a central pit. Rayed dorsal slightly higher than depth of body in male and slightly smaller in female, with strong entire spine, nearly equal to head; origin nearly midway between end of snout and adipose dorsal origin; adipose dorsal base 1·2 times rayed dorsal base extending behind last anal ray by an eye diameter; interdorsal 1·1 times adipose dorsal base. Pectorals low, horizontal, longer or equal to head, non-plaited ventral'y, reaching pelvics in male and not reaching in female, with a strong spine longer or equal to head and denticulated internally. Pelvics non-plaited, ventrally 1·4—1·5 in head, not reaching anal; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·2 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked 1·0—1·2 in head, 6·7—6·9 in total length, lower lobe the longer, but in some specimens, the upper longer; least height of caudal peduncle 2·2—2·6 in its length. Lateral line.

Skin profusely granulated. Uniformly dark brown above becoming lighter below; some specimens with a number of black dots.

It attains 117 mm. in length; in freshwater.

Distribution.—India and Pakistan.

398. **Glyptothorax lonah** (Sykes)

(Pl. XI, figs 7, 8)

1838 *Bagrus lonah* Sykes, *Proc. zool. Soc. Lond.* Part 6, p. 164.

1841. *Bagrus lonah* Sykes, *Trans. zool. Soc. Lond.*, **2**, p. 371 (type locality : Deccan).

1864. *Glyptosternum lonah* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 187.

1864. *Glyptosternum dekkanensis* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 187 (type locality : Deccan).

1877. *Glyptosternum lonah* Day (*partim*), *Fish. India*, p. 496, pl. 113, fig. 5.

1889. *Glyptosternum lonah* Day (*partim*), *Fauna Brit. India*, Fish., **1**, p. 196, fig. 72.

1923. *Glyptothorax dekkanensis* Hora, *Rec. Indian Mus.*, **25**, p. 30.

1937. *Glyptothorax lonah* Hora & Misra, *J. Bombay nat. Hist. Soc.*, **39**, p. 513 (Deolali).

1938. *Glyptothorax annandalei* (*nec.* Hora) Hora & Misra, *J. Bombay nat. Hist. Soc.*, **40**, p. 36, pl. 3, figs. 3, 3a (Poona).

1938. *Glyptothorax dekkanensis* (*nec.* Günther) Hora, *Rec. Indian Mus.*, **40**, p. 241.

1938. *Glyptothorax lonah* Hora, *Rec. Indian Mus.*, **40**, p. 371. pl. 7, figs. 1, 2.

1954. *Glyptothorax lonah* Chauhan & Ramkrishna, *Rec. Indian Mus.*, **51**, p. 397 (Balangir Dt., Patna State, Orissa).

1954. *Glyptothorax lonah* Menon, *Rec. Indian Mus.*, **52**, p. 48. Godavari river near Indore road bridge, Nasik, Darna river near Fitzgerald bridge, and Mutha river, near Nanderi, Poona, Gulli nullah at the foot of Baidila range, and Suktel river up Harishanker rest house, Orissa).

Vernacular names.—INDIA : *Khordoo*, Deolali.

D. 1/6/0; P. 1/9; V. 6; A. 11-14 (3-4/8-10); C. 15-17.

Body elongate, subterete. Head depressed, as long as broad, 5·0—5·2; depth 6·5—7·2 in total length (4·2 and 5·8 in standard length). Snout 2·0 in head. Eyes small, superior, subcutaneous, in the posterior half of head, 10·0 in head, 5·0 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer. Maxillary barbels reaching first third of pectorals, outer mandibulars to gill openings, inner mandibulars shorter, nasals to anterior margin of orbit. The occipital process 4 times as long as broad, reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without a central pit. Rayed dorsal ¾ the depth of body, with a weak entire spine 1·5 in head; origin nearer to adipose dorstal origin than to snout end; adipose dorsal base equal to rayed dorsal base, extending opposite last anal ray; in erdorsal 1·5 times adipose dorsal base. Pectorals low, horizontal, plaited ventrally, not quite reaching pelvics, 1·1 in head, with a broad spine serrated internally and roughened externally. Pelvics plaited ventrally, 1·5 in head, not reaching anal; origin about an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·1 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 5·0—5·2 in total length, lower lobe slightly longer; least height of caudal peduncle 1·5 in its length. Lateral line.

Skin granulated. Yellowish brown above becoming lighter below.

It attains 152 mm. in length; in freshwater.

Distribution.—India : The Godavari, the Darna and Mutha rivers, Maharashtra, the Gulli nallah and Saktel river, Orissa.

399. Glyptothorax madraspatanum (Day)

1873. *Glyptosternum madraspatanum* Day, *J. Lin. Soc. Lond.*, **11**, p. 526 (type locality : Bhavani R., Nilgiris; type in the Zoological Survey of India, Calcutta).

1877. *Glyptosternum madraspatanum* Day, *Fish. India*, p. 498, pl. 116, fig. 4.

1889. *Glyptosternum madraspatanum* Day, *Fauna Brit. India*, Fish., **1**, p. 200.

1923. *Glyptothorax madraspatanus* Hora, *Rec. Indian Mus.*, **25**, p. 29.

1941. *Glyptothorax madraspatanus* Hora & Law, *Rec. Indian Mus.*, **43**, p. 255 (Travancore).

1954. *Glyptothorax madraspatanum* Menon, *Rec. Indian Mus.*, **52**, p. 31 (the Bhavani, Nilgiris; the Cauvery, Coorg; Pampadampara, Western Ghats, Kerala).

B. 6; D. 1/6/0; P. 1/10; V. 1/5; A. 10-11(2-3/8); C. 17.

Body elongate, subterete. Head depressed, 5·0—5·2; depth 6·2 in total length (4·1—4·3 and 5·0—5·8 in standard length). Snout 2·0—2·2 in head. Eyes small, superior, subcutaneous, in the middle of head or slightly in its posterior half, 6·5—6·8 in head, 3·1—3·2 in snout, 1·1—1·5 in interorbital. Mouth inferior, upper jaw longer. Maxillary barbels with broad bases, reaching pectoral base, outer mandibulars equal to snout, inner mandibulars equal to gape of mouth, nasals 1·5 times eye diameters, not reaching the anterior margin of orbit. The occipital process 4 times as long as broad, reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without a central pit. Rayed dorsal 1·0—1·2 in head, 1·0—1·3 times depth of body, with a spine equal to depth of body, serrated on both edges; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·1 times rayed dorsal base extending opposite to last anal ray; interdorsal 1·3 times adipose dorsal base. Pectorals low, horizontal, non-plaited ventrally, not reaching pelvics, 1·0—1·1 times head, with a broad spine 1·1—1·2 in head and denticulated internally. Pelvics 1·3—1·5 in head, almost reaching anal origin, opposite the last dorsal ray, much nearer to anal origin than to pectoral base. Anal 1·1—1·4 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·3 times head, 4·3 in total length; lobes subequal; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Yellowish with dark bands; fins yellowish with dark bands.

It attains 127 mm. in length; in freshwater.

Distribution.—India : The Bhavani, the Cauvery and stream near Pampadampara, Western Ghats.

400. **Glyptothorax pectinopterus** (Mc Clelland)

(Pl. XI, figs. 9,10)

1842. *Glyptosternon pectinopterus* Mc Clelland, *Calcutta J. nat. Hist.*, **2**, p. 587 (type locality : Simla).

1864. *Glyptosternum pectinopterum* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 188.

1923. *Glyptothorax pectinopterus* Hora, *Rec. Indian Mus.*, **25**, p. 18, pl. 1, fig. 1, pl. 4, fig 3.

1936. *Glyptothorax pectinopterus* Hora & Mukerji, *Rec. Indian Mus.*, 38, p. 137 (Lachiwala : Song and Ray Nadi).

1954. *Glyptothorax pectinopterus* Menon, *Rec. Indian Mus.*, **52**, p. 47 (the Jumna, the Sutlej, Kangra valley, irrigaticn channel at Lachiwala and Song river at Dehra Dun, the Naudhaur river, Naini Tal.).

Vernacular names.—INDIA : *Nung grare, Kuggar*, Punjab. PAKISTAN : *Juppah, No-woo.*

B. 9; D. 1/5/0; P. 1/8; A.1/5; A. 7; C. 17.

Body elongate, subterete. Head greately depressed, 5·5; depth 6·8 in total length (4·0—4·5 and 5·8—6·0 in standard length). Snout 1·9—2·0 in head. Eyes small, superior, subcutaneous, in the middle of head or slightly in its posterior half, 10·0 in head; interorbital 1/3 head. Mouth inferior, upper jaw longer; lips papillated. Maxillary barbels reaching middle of pectorals, outer mandibulars to the pectoral base, inner mandibulars to gill openings, nasals to the anterior margin of eye. The occipital process reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus as long as broad, without a central pit. Rayed dorsal 1·2—1·3 in head, 1·1 times depth of body, with a weak entire spine; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·1 times rayed dorsal base, extending about 2 eye diameters behind last anal ray; interdorsal 1·7—2·0 times adipose dorsal base. Pectorals low, horizontal, plaited ventrally, not reaching anal fin; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3—1·4 in head; origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·1 in head, 5·8 in total length, lower lobe slightly longer; least height of caudal peduncle 2·1—2·2 in its length. Lateral line.

Skin granulated. Dark brown above becoming lighter below with a light orange streal along dorsal edge of body and tail; dorsal and caudal fins greyish tipped light yellow.

It attains 74 mm. in length; in freshwater.

Distribution.—India : the Yamuna, the Sutlej, irrigation channel at Lachiwala and Song river at Dehra Dun, the Naudhaur river, Naini Tal. Pakistan.

401. Glyptothorax platypogonoides (Bleeker)

1855. *Pimelodus platypogonoides* Bleeker, *Nat. Tijd. Ned. Indic*, **9**, p. 272 (type locality : Sumatra).

1890. *Glyptothorax dorsalis* Vinciguerra, *Pesci di Burmania*, pp. 28, 118, pl. 7, fig. 4 (type locality : Meetan, Burma).

1913. *Glyptosternum platypogonoides* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, **2**, p. 267 (Sumatra).

1921. *Glyptothorax dorsalis* Hora, *Rec. Indian Mus.*, **22**, p. 180 (Manipur Valley).

1921. *Glyptothorax minutus* Hora, *Rec. Indian Mus.*, **22**, p. 180, text-fig. 1 (type locality : Imphal Stream, near Karong).

1923. *Glyptothorax minutus* Hora, *Rec. Indian Mus.*, **25**, p. 27.

1945. *Glyptothorax platypogonoides* Smith, *U.S. nat. Mus., Bull.* No. 188, p. 397 (tributary of the Tapi R., Siam).

1954. *Glyptothorax platypogonoides* Menon, *Rec. Indian Mus.*, **52**, p. 44 (Imphal Stream, near Thanga and Amamlu Turail, near Imphal, Manipur, Assam; Pegu Yomas, Burma; Nakon, Siam).

Vernacular names.—INDIA : *Nga-pang*, Manipur.

B. 8-9; D. 1/6-7/0; P. 1/9-10; V. 1/5; A. 12-13 (3-4/9); C. 16-18.

Body elongate, subterete. Head depressed, pointed anteriorly, 5·5—5·7; depth 5·5—6·0 in the total length (4·1—4·7, 5·0—5·5 in standard length). Snout 2·0 in head. Eyes minute, superior, subcutaneous, in the beginning of the posterior half of head, 8·0—11·0 in head, 4·0—5·0 in snout, 2·5—3·0 in interorbital. Mouth inferior, horizontal, upper jaw longer; lips papillated. Maxillary barbels reaching pectoral base, outer mandibulars to the gill openings, inner mandibulars shorter, nasals equalling 2/3 of the distance from eye to posterior nostril or interorbital. The occipital process 3·0—4·0 times as long as broad, reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws. Palate edentulous. The thoracic adhesive apparatus 1·5 times as long as broad, without a central pit. Rayed dorsal 1·3 in head, with a spine 1·5 in head, denticulated internally, origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·2 times rayed dorsal base, extending about an eye diameter behind last anal ray; interdorsal 1·3 times adipose dorsal base. Pectorals low, horizontal, non-plaited ventrally, extending to the middle of rayed dorsal base, not reaching pelvics, with a strong spine 1 ·7 in head, denticulated internally. Pelvics 1 ·7 in head, not reaching anal fin; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 1 ·5 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1 ·1 times head, 4 ·2 in total length, lower lobe, the longer; least height of caudal peduncle 2 ·0 in its length. Lateral line.

Skin denticulated. Uniform brown above becoming lighter below; fins with broad dark band.

It attains 120 mm. in length; in freshwater.

Distribution.—India : Imphal stream near Thanga and Amamlu Turail, near Imphal, Manipur valley, Assam, Burma : Meetan, Pegu Yomas.—Thailand, Sumatra; in the latitudinal and longitudinal range of 16°—24° 44′ N., 93° 58′—98° 40′ E., in the Indian region and 0° 00′—8° 30′ N., 100′ E. beyond Indian region.

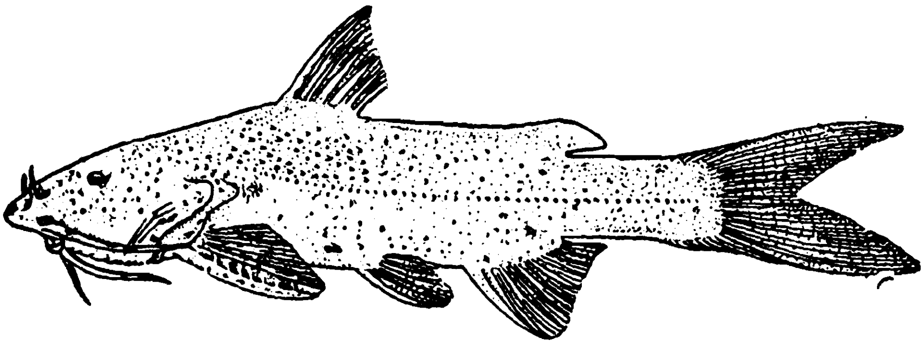
402. **Glyptothorax prashadi** Mukerji

(Text-fig. 48)

1932. *Glyptothorax prashadi* Mukerji, *Rec. Indian Mus.*, **34**, p. 281, text-fig. 1 (type locality : Kyenchang R., Mergui Dt., L. Burma; type is in the Zoological Survey of India, Calcutta).

1945. *Glyptothorax prashadi* Smith, *U.S. nat. Mus. Bull.*, 188, p. 402 (Siam).

1954. *Glyptothorax prashadi* Menon, *Rec. Indian Mus.*, **52**, p. 42 (Burma, Siam).



TEXT-FIG. 48.—*Glyptothorax prashadi* Mukerji (After D. D. Mukerji)

B. 8; D. 1/6/0; P. 1/7; V. 1/5; A. 3/10; C. 17.

Body elongate, subterete. Head longer than broad, twice as broad as deep, depressed, 4·5; depth 5·5 in the total length (3·5 and 4·3 in standard length). Snout broadly rounded, 4·1 in head, slightly longer than postorbital part of head. Eyes nearly in the middle of head, small, superior, subcutaneous 8·2 in head, 4·1 in snout, 2·2 in concave interorbital. Mouth inferior, upper jaw longer; lips finely papillated. Maxillary barbels reaching slightly beyond pectoral base, outer mandibulars to pectoral base, inner mandibulars much shorter, nasals reaching anterior margin of orbit, 1·5 in the distance between its base and anterior margin of eye. The occipital process reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws. Palate edentulous. The thoracic adhesive apparatus. 1·5 times as long as broad, without a central pit. Rayed dorsal 1·6 in head, with a strong spine serrated internally, origin nearer to adipose dorsal origin than to snout end; adipose dorsal base equal to rayed dorsal base, exaending opposite to last anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals non-plaited, 1·4 in head, not reaching pelvics, with a broad strong spine serrated internally. Pelvics non-plaited, 2·0 in head, reaching anal; origin, slightly opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·8 in head; origin half an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, nearly equal to head, 4·7 in total length, lobes subequal; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin rough with cone-shaped, sharp prickles arranged regularly and directed backwards. Dark brown above with few irregular, scattered, black dots on body and fins.

It attains 66 mm. in length; in freshwater.

Distribution.—Burma : The Kyenchang, Mergui Dt., Lower Burma.—Thailand; in the latitudinal and longitudinal range of 12° 32′ N., 99′ 3° E. in Burma and 8° 30. N., 100° E. in Thailand.

403. **Glyptothorax saisii** (Jenkins)
(Pl. XII, fig. 1)

1910. *Glyptosternum saisii* Jenkins, *Rec. Indian Mus.*, **5**, p. 128, pl. 6, fig. 6, text-fig. 1 (type locality : Sita nullah, Paresnath hills, Bihar; type is in the Zoological Survey of India, Calcutta).

1923. *Glyptothorax saisii* Hora, *Rec. Indian Mus.*, **25**, p. 20.

1954. *Glyptothorax saisii* Menon, *Rec. Indian Mus.*, **52**, p. 54.

D. 1/6/0; P. 1/7; V. 1/5; A. 10; C. 14.

Body elongate, subterete. Head depressed, 4·5, depth 6·5 in total length (3·8 and 5·5 in standard length). Snout 2·2 in head. Eyes nearly in the middle of head, small, subcutaneous, superior, 9·1 in head, 4·0—5·0 in snout, 3·0 in interorbital. Mouth inferior, upper jaw longer; width of gape 2·3 in length of head; lips papillated. Maxillary barbels reaching slightly beyond pectoral base, outer mandibulars to pectoral base, inner mandibulars to gill openings, nasals reaching 3/4 of the distance orbit. Occipital process reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad without a central pit. Rayed dorsal equal to depth of body, 1·4 in head, with a spine; origin midway between snout end and adipose dorsal origin; adipose dorsal base equal to rayed dorsal base, extending opposite to last anal ray; interdorsal 1·4 times adipose dorsal base. Pectorals low, horizontal, not reaching pelvics, plaited ventrally, 1·2 in head, with a strong flattened spine serrated internally. Pelvics not reaching anal, 1·7 in head; origin opposite to last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·7 in head; origin slightly before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal slightly forked; least height of caudal peduncle 2·0—2·2 in its length. Lateral line.

Skin granulated. Greyish black above, whitish below; rays and spines blackish; caudal fin with black spots.

It attains 70 mm. in length : in freshwater.

Distribution.—India : Sita nullah, Paresnath hills, Bihar.

404. Glyptothorax sinense (Regan)

1908. *Glyptosternon sinense* Regan, *Ann. Mag. nat. Hist.*, (8) **1**, p. 110 (type locality : Tungting, China; type is in the British Museum, London).

1931. *Glyptosternon sinense* Chu, *Biol. Bull. St. John's Univ.*, No. 1, p. 82.

1933. *Glyptothorax sinense* Mukerji, *J. Bomaby nat. Hist. Soc.*, **36**, p. 280, pl. 2, fig. 1 (Phungin Hka, tributary of Mali Hka R., U. Burma).

1943. *Glyptosternon sinense* Nichols, *Nat. Hist. Central Asia*, **9**, p. 53.

1954. *Glyptothorax manipurensis* A.G.K. Menon, *Rec. Indian Mus.*, **52**, p. 23, text-fig. 1, b, c (type locality : Barak river, Karong, Manipur State, Assam. (type is in the Zoolcgical Survey of India, Calcutta).

1954. *Glyptothorax sinense* M.A.S. Menon, *Rec. Indian Mus.*, **52**, p. 35.

Vernacular name.—BURMA : *Nga Shari.*

D. 1/6/0; P. 1/9; V. 1/5; A. 2/9; C. 17.

Body elongate, suterete. Head depressed, longer than broad, nearly twice as broad as deep, 5·4; depth 7·0 in the total length (4·1 and 5·9 in standard length). Snout broadly rounded, 2·1 in head, equal to postorbital portion of head. Eyes small, subcutaneous, superior, in the posterior half of head, ,9·2 in head, 4·4 in snout, 2·8 in the convex interorbital, half the distance between nostrils. Mouth inferior, upper jaw longer; width of gape equal to length of snout; lips papillated. The maxillary barbels with broad bases, reaching a little beyond pectoral base, outer mandibulars half as long as maxillaries, inner mandibulars much shorter, nasals reaching middle of the distance between their bases and the anterior margin of eye. The occipital process not reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus rhomboidal, considerably longer than broad, without a central pit. Rayed dorsal 1·4 in head, with a spine coarsely serrated bearing 3-5 blunt internal denticulations; origin midway between snout end and adipose dorsal origin or slightly nearer to adipose dorsal origin; adipose dorsal base 1.2 times or equal to rayed dorsal base; interdorsal 2·0—2·5 times the adipose dorsal base. Pectorals low, horizontal, non-plaited, slightly smaller than head, not reaching pelvics, with a strong spine bearing 9-12 sharp internal denticulations. Pelvics 1·4 in head, not reaching anal; origin half an eye diameter before or behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin an eye diameter before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, slightly smaller than head, 5·3—5·4 in total length, lobes subequal; least height of caudal peduncle 2·0—2·4 in its length. Lateral line.

Skin smooth. Greenish brown with 2 faint irregular dark patches, one below rayed dorsal and other below adipose dorsal; rayed dorsal with a broad black longitudinal band in the middle.

It attains 126 mm. in length; in freshwater.

Distribution.—India : The Basak river, Kasong, Manipur Assam. Burma : the Phungin Hka, tributary of the Mali Hka, Upper Burma.—Tungting, China; in the latitudinal and longitudinal range of 24° 44′—26° 45′ N., 93° 58′—97° 45′ E. in the Indian region and 30° N., 108° E. in the Yangtse Kang river in China.

405. Glyptothorax stoliczkae (Steindachner)

1867. *Glyptosternum stoliczkae* Steindachner, *Sitz.* **R.** *Acad. Wiss. Wien.*, **55**, pt. 1, p. 533, pl. 5, fig. 1; pl. 6, fig. 1 (type locality: Simla).

1877. *Glyptosternum pectinopterum* (*nec.* Mc Clell.) Day, *Fish. India*, p. 499 pl. 116, fig. 6.

1889. *Glyptosternum pectinopterum* (*nec.* Mc Clell.) Day, *Fauna Brit. India*, Fish., **1**, p. 201.

1923. *Glyptothorax stoliczkae* Hora, *Rec. Indian Mus.*, **25**, p. 17.

1954. *Glyptothorax stoliczkae* Menon, *Rec. Indian Mus.*, **52**, p. 31 (Simla, W. Himalayas).

B. 10; D. 1/6/0; P. 1/8-9; V. 6; A. 9-11/(1-2/8-9); C. 17; Vert. 15-17.

Body elongate, subterete. Head greatly depressed, width nearly equal to its length, 4·7—5·0; depth 6·0—7·0 in the total length (3·7—4·0 and 5·0—5·6 in the standard length). Snout depressed, 2·7 in head. Eyes small, subcutaneous, in the middle of head, 12·5 in head, 5·0 in snout 3·0 in interorbital. Mouth inferior, upper jaw longer, gape of mouth 2·7—3·0 in length of head; lips not fringed. Maxillary barbels with broad bases, reaching middle of pectorals, the outer mandibulars to pectoral base, inner mandibulars half the length of outer mandibulars, nasals to the front border of eye. Teeth villiform, in band in jaws; palate edentulous. Occipital process 3·0 times as long as broad at its base, reaching basal bone of dorsal. Thoracic adhesive apparatus longer than broad, without a central pit. Rayed dorsal 1·2 in head, with a moderately strong entire spine, 1·7 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·4 times rayed dorsal base, extending an eye diameter behind last anal ray; interdorsal equal to adipose dorsal base. Pectorals low, horizontal, not reaching pelvics, plaited ventrally, 1·0 in head, with a flattened spine serrated internally and 1·3 in head. Pelvics low, horizontal, plaited ventrally, 1·3 in head, not reaching anal; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3 in head; origin an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes subequal, 1·3 in head, 5·5—6·0 in total length; least height of caudal peduncle 2·0 in its length. Lateral line.

Skin smooth. Uniform brown, fins yellow tipped black. It attains 122 mm. in length; in freshwater.

Distribution.—India : Simla.

406. **Glyptothorax striatus** (Mc Clelland)

1842. *Glyptosternon striatus* Mc Clelland, *Calcutta J. nat. Hist.*, **2**, p. 587, pl. 6, figs. 1, 2 (type locality : Khasya Hill, Assam; type is in the British Museum, London).

1860. *Glyptothorax striatus* Blyth, *J. As. Soc. Bengal*, **29**, p. 154.

1864. *Glyptosternum striatum* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 188.

1877. *Glyptosternum striatum* Day, *Fish. India*, p. 498.

1889. *Glyptosternum striatum* Day, *Fauna Brit. India*, Fish., **1**, p. 200.

1923. *Glyptothorax striatus* Hora, *Rec. Indian Mus.*, **25**, p. 20.

1954. *Glyptothorax striatus* Menon, *Rec. Indian Mus.*, **52**, p. 53 (Sikkim, Assam).

B. 8; D. 1/7/0 P. 1/10; V. 1/5; A. 9; C. 17.

Body elongate, subterete. Head depressed, nearly as broad as long, 4·7; depth 6·0 in total length (3·7 and 5·0 in standard length). Snout depressed, broadly pointed, 2·0 in head. Eyes subcutaneous, superior, in the middle of head, 10·5 in head, 5·1 in snout. Interorbital 3·0—4·0 in head. Mouth inferior, transverse, upper jaw longer; gape of mouth ½ of head length; lips not papillated. Maxillary barbels with broad bases, reaching middle of pectorals, outer mandibulars reaching gill openings, inner mandibulars shorter, nasals not reaching anterior margin of eye. Teeth villiform, in band in jaws; none on palate. Occipital process 3 times as long as broad at its base, not reaching basal bone of dorsal. Thoracic adhesive apparatus large, as long as broad. Rayed dorsal higher than depth of body, with a weak smooth spine 2·0 in head; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·1 times rayed dorsal base, extending opposite to last anal ray; interdorsal 1·5 times adipose dorsal base. Pectorals low, horizontal, equal to head, not reaching pelvics, with a strong flattened spine pectinated ventrally, with about 20 fine internal denticulations. Pelvics reaching anal origin, 1·1 in head; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·5 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal deeply forked, lobes subequal, equal to head, 4·7 in total length; least height of caudal peduncle 2·0—2·5 in its length. Lateral line.

Skin tuberculated. Uniform brown.

It attains 216 mm. in length; in freshwater.

Distribution.—India : Khasi hills, Nong Priay river, Cherrapunji, the Someswary river, Assam, below Gantok, Sikkim.

407. **Glyptothorax telchitta** (Hamilton)

(Pl. XII, fig. 2-4)

1822. *Pimelodus telchitta* Hamilton, *Fish. Ganges*, pp. 185, 378 (type locality : freshwater rivers of Bengal and Bihar).

1822. *Pimelodus botius* Hamilton, *Fish. Ganges*, pp. 192, 378 (type locality : northern rivers of Bengal).

1877. *Glyptosternum botia* Day, *Fish. India*, p. 497, pl. 112, fig. 4.

1877. *Glyptosternum telchitta* Day, *Fish. India*, p. 498, pl. 116, fig. 2.

1889. *Glyptosternum botium* Day, *Fauna Brit. India*, Fish., **1**, p. 198.

1889. *Glyptosternum telchitta* Day, *Fauna Brit. India*, Fish., **1**, p. 199.

1923. *Glyptothorax botia* Hora, *Rec. Indian Mus.*, **25**, p. 27.

1923. *Glyptothorax telchitta* Hora, *Rec. Indian Mus.*, **25**, p. 28.

1929. *Pimelodus telchitta* Hora, *Mem. Indian Mus.*, **9**, pl. 21, fig. 3 (Hamilton's MS. drawing).

1938. *Glytothorax telchitta* Shaw & Shebbeare, *J. roy. As. Soc. Bengal*, Sci., **3**, (1937) p. 103, text-fig. 105.

1939. *Glyptothorax botia* Das *Rec. Indian Mus.*, **41**, p. 448 (Damodar R., near Ramgarh, Hazaribagh Dt.).

1949. *Glyptothorax telchitta* Hora & Menon, *Rec. Indian Mus.*, **46**, p. 57, pl. 2, figs. 1, 2, 3.

1949. *Glyptothorax telchitta* Hora, *J. zool. Soc. India*, **1**, p. 2 (Rihand R. at Dam site, Mirzapur Dt.).

1950. *Glyptothorax telchitta* A.G.K. Menon, *Rec. Indian Mus.*, **47**, p. 235 (Kosi R., Nepal).

1954. *Glyptothorax telchitta* M.A.S. Menon, *Rec. Indian Mus.*, **52**, p. 42 (U.P., Bihar, Bengal; Nepal).

Vernacular names.—INDIA: *Gooacherah*, Bengali; *Telliah*, Hindi.

B. 6; D. 1/6-7/0; P. 1/7-9; V. 6; A. 9-12; C. 16-18.

Body spindle-shaped. Head depressed, bluntly pointed anteriorly, 5·3; depth 6·8 in total length (4·1—4·6 and 5·8 in standard length). Snout 2·0 in head. Eyes small, superior, subcutaneous, in the posterior half of head, 10·0—11·7 in head, 5·0—5·5 in snout, 2·1—2·6 interorbital. Mouth inferior, horizontal; width of gape equal to half snout, upper jaw longer; lips papillated. Maxillary barbels with broad bases, reaching anterior margin of eye, outer mandibulars half as long as snout, inner mandibulars equal to the gape of mouth, nasals nearly as long as the distance between their bases. The occipital process not reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus, spindle-shaped, longer than broad, without a central pit. Rayed dorsal 1·3—1·5 in head, with a spine, entire on both edges; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·3 times rayed dorsal base, extending opposite to last anal ray; interdorsal 2·2 times adipose dorsal base. Pectorals non-plaited, 1·3—1·4 in head, not reaching pelvics, with a strong, broad spine, denticulated internally. Pelvics non-plaited, 1·5—1·8 in head, not reaching anal; origin opposite last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·3—1·5 in head; origin an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, 1·2 in head, 6·1 in total length; least height of caudal peduncle 2·0—3·8 in its length. Lateral line.

Skin rough with bony tubercles. Darkish brown above and sides, dirty yellow below; head, sides and fins mottled with dark spots; dorsal, pelvics, pectorals, anal with spotted bands.

It attains 152 mm. in length; in freshwater.

Distribution.—India : The Yamuna, the Rihand river, Mirzapur Dt., Mawai, Bara Banki, U. P., the Jharahi, Sripur, Saran Dt., Mohalpahari, Santal Parganas, Damodar river near Ramgarh, Hazaribagh, Bihar, Birbhum, rivers of Terai and Duars, W. Bengal. Nepal: the Kosi river. Bangladesh.

408. **Glyptothorax trewavasae** Hora

(Pl. XII, fig. 5, 6; Text-fig. 49)

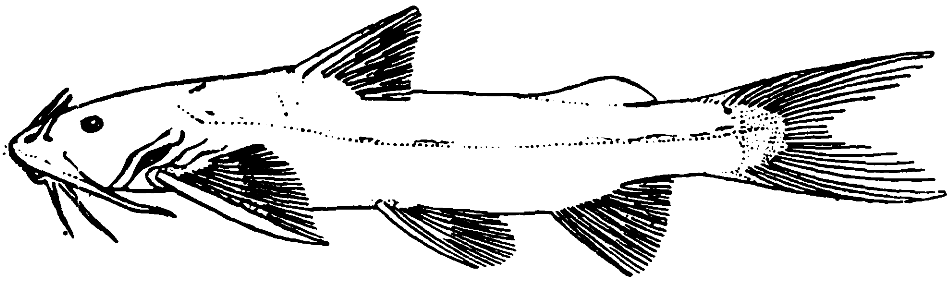
1919. *Euglyptosternum saisii* (*nec* Jenkins) Annandale, *Rec. Indian Mus.*, **16,** p. 126 (Yenna Valley, Satara Dt.)

1923. *Glyptothorax dekkanensis* (*nec.* Günther) Hora, *Rec. Indian Mus.*, **25,** p. 24, fig. 3.

1937. *Glyptothorax dekkanensis* (*nec.* Günther) Hora, *Rec. Indian Mus.*, **39,** p. 14, text-fig. 3 (Thunga R., at Shimoga, Mysore State).

1938. *Glyptothorax trewavasae* Hora, *Rec. Indian Mus.*, **40,** p. 373, pl. 7, figs. 3, 4 (type locality : Yenna Valley, Satara Dt.; type is in the Zoological Survey of India, Calcutta).

1954. *Glyptothorax trewavasae* Menon, *Rec. Indian Mus.*, **52,** p. 46 (Krishna river drainage of Satara Dt., Maharashtra and Shimoga Dt., Mysore).



TEXT-FIG. 49.—*Glyptothorax trewavasae* Hora (After S. L. Hora)

D. 1/6/0; P. 1/9; V. 1/5; A. 2/9; C.17

Body elongate, subterete. Head depressed, longer than broad, 4·8—5·2; depth 7·4—9·3 in the total length (3·8—4·0 and 5·9—7·1 in standard length); ventral surface ridged, grooved, papillated. Snout rounded, 1·7—2·0 in head. Eyes small, superior, subcutaneous, in the posterior half of head, 11·5 in head, 5·3 in snout. Mouth inferior, transverse, horizontal; gape equalling the width of head; lips thin slightly papillated. Maxillary barbels with broad bases, not reaching pectoral base, outer and inner mandibulars considerably shorter, nasals not reaching anterior margin of eye. The occipital process 3 times as long as broad, not reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus as broad as long, without a central pit. Rayed dorsal 1·1 in head, equidistant between snout end and adipose dorsal origin, or nearer to adipose dorsal origin than to snout end, with a strong entire spine 1·9—2·0 in head; adipose dorsal base equal to rayed dorsal base, extending an eye diameter before last anal ray; interdorsal 1·8 times adipose dorsal base. Pectorals non-plaited, not reaching pelvics, 1·0—1·3 in head, with a broad strong spine strongly pectinated internally, serrated externally. Pelvics non-plaited, 1·4—1·5 in head, not reaching anal; origin an eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·2—1·6 in head; origin nearly half an eye diameter behind adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, slightly longer, equal to or slighter smaller than head, lobes subequal; least height of caudal peduncle 1·7—2·5 in its length. Lateral line.

Skin tuberculated. Uniform light grey with pectoral, dorsal, adipose and caudal bases dark; portions of certain rays of dorsal, anal and pelvics black; distal portion of caudal fin dark, tipped with lighter colour.

It attains 140 mm. in length; in freshwater.

Distribution.—India : The Yenna valley and Koyna valley, Satara Dt., Maharashtra, the Thunga river at Shimoga, Mysore.

409. **Glyptothorax trilineatus** Blyth

1860. *Glyptothorax trilineatus* Blyth, *J. As. Soc. Bengal*, **29**, p. 154 (type locality : Tenasserim, Burma : type is in the Zoological Survey of India, Calcutta).

1864. *Glyptosternum trilineatum* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 185.

1877. *Glyptosternum trilineatum* Day, *Fish. India*, p. 497, pl. 116, fig. 3.

1889. *Glyptosternum trilineatum* Day, *Fauna Brit. India*, Fish., 1, p. 197.

1890. *Glyptothorax trilineatus* Vinciguerra, *Pesci di Birmania*, pp. 28, 115 (Catein).

1923. *Glyptothorax trilineatus* Hora, *Rec. Indian Mus.*, **25**, p. 29.

1934. *Glyptothorax laosensis* Fowler, *Proc. Acad. nat. Sci. Philad.*, **86**, p. 88, figs. 28, 29, 30 (type locality : Laos).

1937. *Glyptothorax trilineatus* Hora, *Rec. Indian Mus.*, **39**, p. 338 (Chindwin drainage).

1945. *Glyptothorax trilineatus* Smith, *U.S. nat. Mus. Bull.*, No. 188, p. 399 (Thailand : Trang, Moping river; India; Nepal : (Burma).

1954. *Glyptothorax trilineatus* Menon, *Rec. Indian Mus.*, **52**, p. 49 (Burma; Siam, Laos).

D. 1/6-7/0; P. 1/10-11; V. 1/5; A. 1/9-10; C. 16-18.

Body elongate, subterete. Head broadly pointed, depressed, 5·7—6·0; depth 6·0 in total length (4·5 and 4·5 in standard length). Snout 2·0 in head. Eyes small, superior, in the middle or in the posterior half of head, 7·5—9·7 in head, 4·6 in snout, 2·6 in interorbital. Mouth inferior, horizontal, upper jaw longer; width of gape equal to snout; lips papillated. The maxillary barbels reaching middle of pectorals, outer mandibulars to pectoral base, inner mandibulars equal to the distance between the eye and nasal opening, nasals equal to distance between their bases and nearly reaching orbit. The occipital process 3·0—4·0 times as long as broad, reaching basal bone of dorsal. Teeth villiform in crescentic band in jaws; palate edentulous. The thoracic adhesive apparatus longer than broad, without a central pit. Rayed dorsal 1 1 in head, with a weak spine finely serrated at its upper part or entire internally; origin midway between snout end and adipose dorsal origin; adipose dorsal base 1·0—1·3 times rayed dorsal base, extending an eye diameter behind last anal ray; interdorsal 2·0 times adipose dorsal base. Pectorals low, slightly smaller than head, not reaching pelvics, with a broad spine denticulated internally. Pelvics 2·2 in head, not reaching anal fin; origin about 2 eye diameters behind last dorsal ray, nearer to anal origin than to pectoral base. Anal 1·7 in head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal forked, equal to head, 5·7—6·0 in total length, lobes subequal; least height of caudal peduncle 2·4 in its length. Lateral line.

Skin granulated. Chest-nut brown above, pale yellow below with a well marked dirty white longitudinal streak along the back from occiput to caudal base, a second along the lateral line and third along the abdominal margin; fins tinged with dirty brownish yellow.

It attains 140 mm. in length; in freshwater.

Distribution.—India : streams on Assam.—Burma border. Burma : the Sittang river, Taloktwin, Namya river at Kongan Thana, upper Chindwin drainage, Burma; Rangoon, Thagata Juva, Catein, Nepal.— Thailand, Doi Anyka, Laos; in the latitudinal and longitudinal range of 12°6′—27°42′N., 85°12′—99°3′ E. in the Indian region. and 7°30′—19°N., 99°30′—104°13′E. beyond the Indian region.

xviii. Subfamily *GLYPTOSTERNINAE*

First ray of paired fins soft and weak, ensheathed in thick skin, with soft internal pointed cartilaginous rays along its anterior margin. A thoracic adhesive apparatus of transverse folds of skin present or absent. Teeth in jaws only No series of bony plates from dorsal fin to root of caudal. Uppermost caudal ray normal.

The subfamily *GLYPTOSTERNINAE* is represented by seven genera in the Indian region.

Key to genera of subfamily GLYPTOSTERNINAE

1. A thoracic adhesive apparatus of transverse folds of skin	**Pseudecheneis**
2. No thoracic adhesive apparatus of transverse folds of skin	3
3. Gill openings narrow, restricted to upper parts of head	5
4. Gill openings wide, extending to lower surface of head	**Glyptosternon**
5. Teeth in upper jaw arranged in a single hand	7
6. Teeth in upper jaw arranged in 2 well separated bands	**Exostoma**
7. Teeth in both jaws pointed	9
8. Teeth in both jaws not pointed	**Oreoglanis**
9. Post labial groove continuous : branched pectoral rays 16-19	**Myersglanis**

10. Post labial groove interrupted ; branched pectoral rays 13-17	11
11. Band of teeth in upper jaw produced backwards	**Coraglanis**
12. Band of teeth in upper jaw not produced backwards	**Euchiloglanis**

166. Genus **Euchiloglanis** Regan

1874. *Chimarrhichthys* Sauvage, *Rev. Zool.*, (0) 8, p. 332 (type, *C. davidi* Sauv.) (the name preoccupied *vide* O'Shanghnessy, *Zool. Rec.*, 1874; inadmissible).

1907. *Euchioglanis* Regan, *Rec. Indian Mus.*, **1**, p. 158 (type, *Chimarrhichthys davidi* Sauv., orthotypic).

Body elongate, flattened ventrally upto pelvic base. Head covered with soft skin, depressed, longer than broad or as long as broad. Snout depressed, broadly rounded. Eyes small subcutaneous, in the anterior or posterior half of head. Nostrils close together separated by a flap bearing nasal barbel. 8 barbels, maxillary barbels broad based. Mouth inferior, transverse or crescentic, upper jaw longer; lip thick papillated. Lower labial fold broadly interrupted in the middle. Teeth pointed, in band in jaws; band of teeth in upper jaw continuous or partially divided in the centre, not produced backwards ; palate edentulous. Gill openings narrow, extending below opposite to middle of the base of pectorals. No thoracic adhesive apparatus. Rayed dorsal without a strong spine. A low, moderately long adipose dorsal. Interdorsal present. Paired fins horizontal, broadly rounded, first ray weak, ensheathed in thick skin, pectinated ventrally with internal soft pointed cartilagnous rays along its anterior margin. Pelvic with 6 rays. A short anal below adipose dorsal base. Caudal lunate or truncate. Lateral line. Skin smooth. Air bladder.

Distribution.—India, Nepal, Burma.

The genus **Euchiloglanis** is represented by two species in the Indian region.

Key to species of genus **Euchiloglanis** Regan

1. Band of teeth in upper jaw partially divided in the centre ; adipose dorsal base 3 ·2 times rayed dorsal base ; rayed dorsal origin nearer to adipose dorsal origin than to snout end — *E. feae*
2. Band of teeth in upper jaw continuous ; adipose dorsal base 2 ·1 times rayed dorsal base ; rayed dorsal origin midway between adipese dorsal origin and snout end — *E. hodgarti*

410. **Euchiloglanis feae** (Vinciguerra)

(Pl. XIII, figs. 1-3)

1889. *Exostoma feae* Vinciguerra, *Ann. Mus. Stor. nat. Genova,* **29,** p. 256, pl. 8, fig. 6 (type locality : Karen-ni Hills, Upper Burma).

1905. *Chimarrhichthys feae* Regan, *Ann. Mag. nat. Hist.,* (7) **15,** p. 184.

1923. *Glyptosternum feae* Hora, *Rec. Indian Mus.,* **25,** p. 37 (Tao, Burma).

1925. *Euchiloglanis feae* Norman, *Ann. Mag. nat. Hist.,* (9) **15,** p. 572.

1952. *Euchiloglanis feae* Hora & Silas, *Rec. Indian Mus.,* **49,** p. 16 (Tao, Upper Burma; Nga Kyantka, Kyonkguet, Burma).

D. 1/5/0; P. 1/14; V. 1/5; A. 2/4; C. 13.

Body elongate, ventrally flattened. Head covered with smooth skin, depressed, 1·1 times longer than broad, 4 ·9, depth 7 ·9 in total length (4 ·3 and 6 ·8 in standard length). Snout depressed, broadly rounded, 2 ·0 in head. Eyes subcutaneous, superior, in the posterior half on head, 9 ·5 in head, 4 ·8 in snout, 2 ·5 in interorbital. Mouth inferior, transverse, upper jaw longer; gape 2 ·5 in the width of head; lips thick, profusely papillated. Lower labial fold interrupted opposite mouth. Nostrils close together, nearer to snout end than to anterior margin of eye, separated by a flap bearing nasal barbel. Maxillary barbels with broad attachments, reaching pectoral base, outer mandibulars to gill openings, inner mandibulars half of the length of outer mandibulars, nasals to the hind border of eye. Teeth pointed, in band in both jaws,; band in upper jaw partially divided in the centre; palate edentulous. Gill openings narrow, above base of outer pectoral ray; gill membranes free from isthmus and from each other. No thoracic adhesive apparatus. Rayed dorsal 1·7 in head, without a strong spine; origin nearer to adipose dorsal origin than to snout end, nearer to pelvic base than to pectoral base; adipose dorsal low, long, its base 3·2 times rayed dorsal base extending about a snout length behind last anal ray; interdorsal 1·1 in adipose dorsal base. Pectorals horizontal, broadly rounded, not reaching pelvics, 1·1 in head, without a strong spine, its outer ray being thick, flattened, pectinated ventrally. Pelvics horizontal, broadly rounded, 1·5 in head, outer ray thick, flattened, pectinated ventrally, origin an eye diameter behind last dorsal ray, ends away from anal origin by a distance 1·2 in head. Anal 1·9 in head; origin an eye diameter behind middle of adipose dorsal base nearer to caudal base than to pelvic base. Caudal truncate, 1·5 in head, 7·6 in total length; least height of caudal peduncle 1·9 in its length. Lateral line.

Skin smooth. Dark brown above lighter below.

It attains a length of 133 mm. in freshwater.

Distribution.—Burma : Karenni Hills, Tao, Upper Burma.

411. **Euchiloglanis hodgarti** (Hora)

(Pl. XIII, figs. 4-6)

1877. *Exostoma blythii* Day (*partim*), *Fish. India*, p. 501.

1889. *Exostoma blythii* Day (*partim*), *Fauna Brit. India*, Fish., **1**, p. 109.

1923. *Glyptosternum hodgarti* Hora, *Rec. Indian Mus.*, **25**, p. 38 (type locality : Pharping, Nepal; rivers below Darjeeling; the Abor Hills).

1925. *Euchiloglanis hodgarti* Norman, *Ann. Mag. nat. Hist.*, (9) **15**, p. 573.

1938. *Euchiloglanis hodgarti* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3** (1937), p. 100, text-fig. 102 (Riyang and Rangbi rivers, 2000-5000 ft.).

1952. *Euchiloglanis hodgarti* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 17 (Pharping, Nepal; Darjeeling; Kurseong; Abor Hills; Teesta Valley).

Vernacular name.—NEPAL : *Til-kabri.*

D. 1/6/0; P. 1/17; V. 6; A. 2/6; C. 13.

Body elongate, flattened ventrally. Head depressed, covered with smooth skin, nearly as broad as long, 5·0; depth 7·5 in total length (4·2 and 6·8 in standard length). Snout depressed, broadly rounded, 2·3—2·5 in head. Eyes small, subcutaneous, superior, in the anterior half of head, 13·0 in head, 5·5 in snout, 3·6 in interorbital. Mouth inferior, crescentic, upper jaw longer; gape of mouth 3·0 in the width of head; lips thick profusely papillated; lower labial folds broadly interrupted. Nostrils close together , nearer the snout end than to the anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with broad attachments, not reaching pectoral base, outer mandibulars nearly to pectoral base, inner mandibulars 1·5 times eye diameter, nasals slightly beyond hind border of eye. Teeth pointed, in band in both jaws, upper band continuous; palate edentulous. Gill openings narrow, above the base of outer pectoral ray. No thoracic adhesive apparatus. Rayed dorsal 1·5 in head without a strong spine; origin midway between adipose dorsal origin and snout end and nearer to pelvic origin than to pectoral base; adipose dorsal base 2·1 times rayed dorsal base, extending opposite to last anal ray and a short length away from caudal base; interdorsal 1·2 times adipose dorsal base. Pectorals horizontal, broadly rounded, equal to head, reaching pelvic base, without a strong spine, outer ray being thick, flattened, pectinated ventrally. Pelvics horizontal, broad, 1·2 in head; origin below last dorsal ray, outer ray thick, flattened, pectinated ventrally, ends away from anal origin by a distance 1·2 in head. Anal 1·5 in head; origin in the middle of adipose dorsal base, nearer to caudal base than to pelvic base. Caudal lunate, 1·4 in head, 7·3 in total length; least height of caudal peduncle 1·8 in its length. Lateral line.

Skin smooth. Brown above lighter below.

It attains 64·8 mm. in length; in freshwater.

Distribution.—India : Teesta Valley, Kurseong, Darjeeling, W. Bengal, Abor Hills, Assam, Nepal : Pharping. Bangladesh.

167. Genus **Coraglanis** Hora & Silas

1952. *Coraglanis* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 12 (type, *Euchiloglanis kishinouyei* Kimura, orthotypic).

The genus **Coraglanis** Hora & Silas differs from the genus **Euchiloglanis** Regan in having the upper band of teeth produced backwards at the sides.

412. **Coraglanis kishinouyei** (Kimura)

(Pl. XIII, figs. 7-9)

1934. *Euchiloglanis kishinouyei* Kimura, *J. Shangai Sci. Inst.*, Sec. 3, 1, pp. 178-179, pl. 6, figs. 1-3. (type locality : the Yangtsekiang, China; type is in the Museum of Zoology, University of Michigan, Ann Arbor, Michigan, U.S.A.).

1936. *Euchiloglanis kishinouyei* Mori, *Stud, Geogr, Distr., Freshwater Fish. E. Asia*, p. 31 (the Yangtsekiang).

1952. *Coraglanis kishinouyei* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 12, pl. 1, figs. 1-3, text-fig. 1 (Chengtu or Keating, Szechwan, China; collected by Dr. Cora D. Reeves from the markets of Kiating or Chengtu).

1962. *Coraglanis kishinouyei* Dutta, *Proc. 1st All India Congr. zool., Jabalpur*, 1959, pt. 2, p. 18 (the Indian Cho-Oyu Expedition, 1958, Eastern Nepal Himalayas, 3000 metres).

D. 1/6/0; P. 1/13; V. 1/5; A. 1/5; C. 17.

Body elongate, ventrally flattened. Head covered with smooth skin, depressed, 1·3 times longer than broad, 4·0, depth 6·8 in total length (3·5 and 5·9 in standard length). Snout depressed broadly rounded, 2·2 in head. Eyes small, subcutaneous in the middle of head, 14·0 in head, 7·0 in snout, 3·0 in interorbital. Mouth inferior, broadly crescentic, upper jaw longer; gape 2·0 in width of head, lips thick, postlabial groove broadly interrupted. Nostrils close together, nearer to snout than to anterior margin of eye, separated by a flap bearing nasal barbel. Maxillary barbels broad based, reaching beyond pectoral base, outer mandibulars to gill openings, inner mandibulars shorter, nasals reaching eye. Teeth pointed, conical in both jaws, upper band of teeth continuous, extending backwards at sides, the lower band of teeth interrupted in the middle as two bands with their painted ends directed upwards. Gill openings narrow, not extending below pectoral base. Gill membranes free from each other. No thoracic adhesive apparatus. Rayed dorsal 1·5 in head, without a strong spine; origin much nearer to snout end than to caudal origin, nearer to adipose dorsal origin than to snout end, nearly 3/4 snout length before pelvic origin. A long low adipose dorsal, its base 2·0 times rayed dorsal base, extending 3/4 snout length behind last anal ray; interdorsal equal to adipose dorsal base. Pectorals horizontal, broadly rounded, almost reaching pelvic origin, 1·1 in head without a strong spine, its outer ray being thick, flattened, pectinated ventrally. Pelvics horizontal, broadly rounded, 1. 6 in head, outer ray thick pectinated ventrally; origin 3/4 snout length behind rayed dorsal origin, nearer to anal origin than to pectoral origin. Anal 2·1 in head; origin 3·0 eye diameters behind adipose dorsal origin, nearer to pelvic origin than to caudal origin. Caudal truncate, 1·8 in head; least height of caudal 2·4 in its length. Lateral line.

Skin smooth. Brownish grey above lighter below. A light dark transverse band at caudal base.

It attains 126·5 mm. in total length.

Distribution.—Nepal : Eastern Himalayas.—China; in the latitudinal and longitudinal range of 27°58′ N., 86°55′E in Nepal and 30°N., 108°E. in the Yangtsekiang in China.

168. Genus **Exostoma** Blyth

1860. *Exostoma* Blyth, *J. As. Soc. Bengal.*, **29**, p. 154 (type, *E. erbdmorei* Blyth, orthotypic).

Body elongate, flattened ventrally to pelvic base. Head covered with soft skin, depressed, as broad as long. Snout depressed, pointed or broadly rounded. Eyes small, superior, subcutaneous, in the middle or posterior half of head. Nostrils close together, separated by a flap bearing nasal barbel. 8 barbels; maxillary barbels broad based. Mouth inferior, transverse, upper jaw longer; lips thickly papillated. Lower labital fold continuous. Teeth small, pointed, 2 separate bands in each jaw, with outer series compressed, obtuse; palate edentulous. Gill openings narrow, extending below middle of pectoral base or opposite to the first ray of the pectoral. No thoracic adhesive apparatus. Rayed dorsal without strong spine. A long low adipose dorsal, continuous or not continuous with caudal. Interdorsal present or absent. Paired fins, horizontal, broadly rounded, first ray weak ensheathed in thick skin, pectinated ventrally, with internal soft-pointed cartilaginous rays along its anterior margin; pelvics with 6 rays. A short anal below adipose dorsal base. Caudal forked or slightly forked or deeply lunate. Lateral line. Skin smooth. Air bladder partially enclosed in bone.

Distribution.—India, Burma.

The genus **Exostoma** is represented by four species in the Indian region.

Key to species of genus **Exostoma** Blyth

1. Gill openings greatly restricted; extending below to above level of the base of first pectinated ray of pectoral ; caudal deeply forked; snout pointed ; branched pectoral	*E. berdmorei*
2. Gill opening extending below of the base of first pectinated ray of pectoral ; caudal deeply lunate ; snout broadly rounded ; branched pectoral rays 10-13	3
3. Adipose dorsal confluent with rayed dorsal fin ; adipose dorsal extending a snout length beyond last anal ray ; branched pectoral rays 13	*E. labiatus*
4. Adipose dorsal not confluent with rayed dorsal fin ; adipose dorsal extending half snout length beyond last anal ray or confluent with caudal ; branched pectoral rays 10	5
5. Adipose dorsal confluent with caudal	*E. vinciguerrae*
6. Adipose dorsal not confluent with caudal	*E. stuarti*

413. **Exostoma berdmorei** Blyth

1860. *Exostoma berdmorei* Blyth, *Proc. As. Bengal,* p. 155 (type locality : Tenasserim).

1864. *Exostoma berdmorei* Günther, *Cat. Fish. Brit. Mus.,* 5, p. 526.

1869. *Exostoma berdmorei* Day, *Proc. zool. Soc. Lond.,* p. 526.

1877. *Exostoma berdmorei* Day, *Fish. India*, p. 502.

1889. *Exostoma berdmorei* Day, *Fauna Brit. India*, Fish., **1**, p. 109.

1925. *Exostoma berdmorei* Norman, *Ann. Mag. nat. Hist.*, (7) **15**, p. 574.

1952. *Exostoma berdmorei* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 27.

D. 1/6/0; P. 1/10; V. 6; A. 6; C. 14.

Body elongate, flattened ventrally. Head covered with soft skin; depressed , as broad as long, 5 ·0; depth of body 9-10 in standard length. Snout pointed, depressed more than half head. Eyes superior, subcutaneous, in the posterior half of head; interorbital 3 ·5—3 ·7 in head. Mouth inferior, upper jaw the longer; gape of mouth 2 ·5 in width of head; lips papillated; lower labial fold continuous. Nostrils close together, nearer to snout end than the anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with broad bases reaching pectoral base, outer mandibulars short equal to nasal barbel, inner mandibulars short, the nasal barbels not to anterior margin of eye. Teeth movable, oar-like, flattened distally, depressed directed backwards in two separate bands in each jaw; palate edentulous. Gill openings narrow, extending above the first ray of the pectoral; gill membranes broad, free throughout. Rayed dorsal without a strong spine; origin nearer to snout end than to caudal base slightly before pelvic origin; adipose dorsal low, long. Pectorals broad, low, not reaching pelvics without a strong spine; the outer ray long flattened, thick and pectinated ventrally. Pelvics horizontal not reaching anal. Anal below adipose dorsal. Caudal deeply forked; least height of caudal peduncle 2 ·5—2 ·7 in its length. Lateral line.

Skin smooth. Olive brown with obscure dark bands; fins dark; abdomen pale.

It attains 102 mm. in length: in freshwater.

Distribution.—Burma : Tenasserim.

414. **Exostoma labiatus** (Mc Clelland)

(Pl XIV, fig. 1)

1842. *Glyptosternon labiatus* Mc Clelland, *Calcutta J. nat. Hist.*, **2**, p. 588 (Mishmee mountains).

1842. *Exostoma labiatum* Günther, *Cat. Fish. Brit. Mus.*, 5, p. 265 (type 3½ inches long, from Griffith's collection).

1877. *Exostoma labiatum* Day, *Fish. India*, p. 501.

1889. *Exostoma labiatum* Day, *Fauna Brit. India*, Fish., 1, p. 108.

1923. *Glyptosternum labiatum* Hora, *Rec. Indian Mus.*, 25, p. 42, pl·1, fig·2

1952. *Exostoma labiatum* Hora & Silas, *Rec. Indian Mus.*, 49, p. 27 (Assam).

D. 1/6/0; P. 1/13; V. 1/6; A. 1/5; C. 3+17+3.

Body elongate, flattened ventrally. Head covered with soft skin, depressed, as long as broad, 5·7; depth 6·8 in total length (4·7 and 5·4 in standard in length). Snout depressed, broadly rounded, 1·8 in head. Eyessuperior, subcutaneous, in the posterior half of head, 15·5 in head, 5·5 in snout, 3·0 in interorbital. Mouth inferior, transverse, upper jaw longer; gape of mouth 2·5 in head length; lips thick, papillated. Lower labial fold continuous. Nostrils close together, nearer to snout end than to the anterior margin of eye, separated by a flap bearing a nasal barbel. Maxillary barbels reaching pectorals, outer and inner mandibulars shorter and nasals to snout end. Teeth movable, oar-shaped, flattened distally, directed backwards; band of upper teeth in 2 distinct patches; palate edentulous. Gill openings extending below to the level of the outermost pectinated ray of the pectoral. Rayed dorsal 1·2 in head, without a strong spine, nearer to adipose dorsal origin than to snout end, nearer to pelvic origin than to pectoral base; adipose dorsal low, long, continuous with the rayed dorsal, extending a snout length beyond last anal ray; its base 1·5 times rayed dorsal base; no interdorsal. Pectorals horizontal, fan-shaped, 1·1 times head, not reaching pelvics, outer ray thick, flattened, pectinated ventrally. Pelvics horizontal, 1·1 in head, not reaching anal; origin below middle of rayed dorsal base, outer ray thick, flattened, pectinated ventrally, ends away from the anal origin by a distance equal to an eye diameter less than the snout. Anal 1·3 in head; origin below an eye diameter before middle of adipose dorsal base. Caudal slightly forked, 1·1 times head, 5·6 in total length, lower lobe slightly longer; least height of caudal peduncle 2·1 in its length. Lateral line.

Skin smooth. Yellowish grey above becoming pale below. It attains 58mm. in length; in freshwater.

Distribution.—India : Mishmee hills, Assam.

415. **Exostoma stuarti** (Hora)

(P. XIV, figs. 2-4)

1919. *Exostoma vinciguerrae* Chaudhuri (*partim*), *Rec. Indian Mus.*, **16**, p. 277 (Nam-Yak R. at Tanja).

1923. *Glyptosternum stuarti* Hora, *Rec. Indian Mus.*, **25**, p. 39, pl. 2, figs. 4-6 (type locality : Nam-Yak R. at Tanja northern frontier of Burma; type is in the Zoological Survey of India).

1925. *Exostoma vinciguerrae* Norman (*partim*), *Ann. Mus. nat. Hist.*, (9) **15**, p. 574.

1952. *Exostoma stuarti* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 26.

D. 1/5/0; P. 1/10; V. 1/5; A. 1/4; C. 12.

Body elongate, flattened ventrally. Head covered with soft skin, depressed, nearly as long as broad, 5·5; depth 5·7 in the total length (4·8 and 4·9 in the standard length). Snout depressed, broadly triangular, 2·2 in head. Eyes superior, subcutaneous, in the middle of head, 11·0 in head, 5·0 in snout, 3·5 in interorbital. Mouth inferior, transverse, upper jaw longer; gape 2·4 in the width of head; lips thick. Lower labial fold continuous. Nostrils close together, nearer to snout end than to anterior margin of eye, separated from each other by a flap bearing the nasal barbel. Maxillary barbels with broad bases, reaching the base of occipital process, outer mandibulars shorter, inner mandibulars equal to eye diameter, nasals not reaching anterior margin of eye. Teeth movable, oar-shaped, flattened distally, directed backwards; band of upper teeth in 2 distinct patches; palate edentulous. Gill openings extending opposite to base of the outer most pectinated ray of pectoral. Rayed dorsal equal to length of head, without a strong spine; origin nearer to adipose dorsal origin than to snout end and nearer to pelvic origin than to pectoral base; adipose dorsal low, long, its base 2·0 times rayed dorsal base, extending nearly half snout length behind last anal ray; interdorsal 2·5 times adipose dorsal base. Pectorals horizontal, broadly rounded, 1·2 times head, not reaching pelvics, with the outer ray thick flattened, pectinated ventrally. Pelvics horizontal, equal to head, origin below middle of rayed dorsal base, with the outer ray thick, flattened, pectinated ventrally, ends away from anal origin by a distance equal to half of snout; origin below middle of rayed dorsal base. Anal 1·5 in head; origin below middle of adipose dorsal base and equidistant between pelvic origin and caudal base. Caudal deeply lunate, lower rays slightly elongated, 1·1 times head, 5·2 in total length; least height of caudal peduncle 2·1 in its length. Lateral line.

Skin smooth. Brownish grey above pale below; a black humeral spot.

It attains 56 mm. in length; in freshwater.

Distribution.—Burma : Nam-yak river at Tanjor in the northern frontier of Burma.

416. **Exostoma vinciguerrae** Regan

(Pl. XIV, figs. 5-7; Text-fig. 50)

1889. *Exostoma labiatum* (*nec.* Mc Clelland) Vinciguerra, *Ann. Mus. stor. nat. Genova*, **29**, p. 252.

1890. *Exostoma labiatum* (*nec.* Mc Clelland) Vinciguerra, *Pisci di Birmania*, pp. 29, 124 (Catein, Burma).

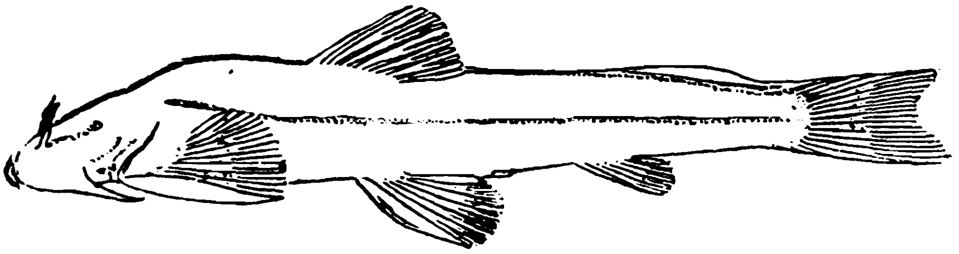
1905. *Exostoma vinciguerrae* Regan *Ann. Mag. nat. Hist.*, (7) **15**, p. 184 (type locality : Upper Burma; Kakhyen Hills; Northern Shan States).

1923. *Glyptosternum vinciguerrae* Hora, *Rec. Indian Mus.*, **25**, p. 41, pl. 3, figs. 1-3.

1923. *Glyptosternum chaudhurii* Hora, *Rec. Indian Mus*, **25**, p. 41 (type locality : Putao Plains, Northern Frontier of Burma; type is in the Zoological Survey of India).

1925. *Exostoma vinciguerrae* Norman, *Ann. Mus. nat. Hist.*, (7) **15**, p. 574.

1952. *Exostoma vinciguerrae* Hora & Silas, *Rec. Indian Mus.*, **49**, (1951) p. 25 (Putao Plains ; Shan States ; Catein in Burma).



TEXT-FIG. 50.—*Exostoma vinciguerrae* Regan (After S. L. Hora).

D. 1/6/0; P. 1/10; V. 1/5; A. 1/5; C. 14.

Body elongate, flattened ventrally. Head covered with soft skin, depressed, 1·1 times as broad as long, 5·9—6·9; depth 7·1—7·8 in total length (5·0—5·5 and 6·1—6·5 in standard length). Snout depressed, broadly rounded , 1·8 in head. Eyes superior, subcutaneous, in the posterior half of head, 9·0—11·5 in head, 4·5—6·5 in snout, 2·0 in interorbital. Mouth transverse inferior, upper jaw longer, gape of mouth 2·3 in width of head; lips thick, papillated. Lower labial fold continuous. Nostrils close together, nearer to snout end than to the anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with broad bases, reaching to anterior 1/3 of pectoral base, the outer mandibulars to bases of pectorals, inner mandibulars and the nasal barbels very small reaching posterior margin of eye. Teeth moveable, oar-shaped, flattened distally, directed backwards, in 2 separate bands in both jaws; palate edentulous. Gill openings, extending below at a level of the base of first pectinated ray of pectoral; gill membranes broad, free, throughout their length. Rayed dorsal equal to head without strong spine; origin nearer to snout end than to caudal base and nearer to adipose dorsal origin than to snout end, nearer to pelvic origin than to pectoral base; adipose dorsal low, long, confluent with the caudal, 2·0—2·2 times rayed dorsal base; interdorsal 1·3—2·8 in adipose dorsal base.

Pectoral low, horizontal, broad, 1·2—1·3 times head, outermost ray flattened, pectinated ventrally, not reaching pelvics. Pelvics 1·0—1 1 times head; origin below middle of rayed dorsal base outermost ray flattend, thick, pectinated ventrally, ends away from anal origin by a distance equal to snout or little less than half snout. Anal 1·3 into head; origin an eye diameter behind adipose dorsal base, nearer to pelvic origin than to caudal base or nearer to caudal base than to pelvic origin. Caudal deeply lunate, lower rays elongated, 1·0—1 1 times head, 5·9—6·0 in total length; least height of caudal peduncle 1.9—2·8 in its length. Lateral line.

Skin smooth. Uniformly brownish; fins pale.

It attains 110 mm. in length; in freshwater.

Distribution.—Burma : Kakhyen hills, northern Shan States, Catein, Putao Plains northern frontier of Burma.

169. Genus **Glyptosternon** Mc Clelland

1842. *Glyptosternon* Mc Clelland, *Calcutta J. nat. Hist.*, **2**, p. 584 (type, *G. reticulatum* Mc Clell., logotypic).

1905. *Parexostoma* Regan, *Ann. Mag. nat. Hist.*, (7) **15**, p. 182 (type *Exostoma stoliczkae* Day, logotypic).

Body elongate, flattened ventrally to pelvic base. Head depressed, covered with soft skin, longer than broad or as long as broad. Snout depressed, broadly rounded. Eyes subcutaneous, minute, superior, in the anterior or middle of head. Nostrils close together, separated by a flap bearing the nasal barbel. 8 barbels, maxillary barbels broad based. Mouth inferior, transverse or broadly crescentic, upper jaw longer; the lips thick, papillated. Lower labial fold interrupted in the middle. Teeth pointed, in band in jaws, in upper jaw produced backwards at sides; palate edentulous. Gill openings wide, extending to lower surface of head. No thoracic adhesive apparatus. Rayed dorsal without a strong spine. A long low adipose dorsal continuous or non-continuous with caudal. Interdorsal present or absent. Paired fins horizontal, broadly rounded with the first ray weak, ensheathed in thick skin, pectinated ventrally bearing internal soft pointed cartilaginous rays along its anterior margin. Pelvics with 6 rays. A short anal below adipose dorsal base. Caudal cut square. Lateral line. Air bladder.

Skin smooth above, often tuberculated ventrally from head to the pelvic base.

Distribution.—The Oxus river system (the Syr-Darya and the Amu Darya in Eastern Turkestan and Bamain river in Afghanistan), the Kabul river, Afghanistan; the headwaters of Kabul river, Chitral and headwaters of the Indus, Pakistan; Leh, Ladak, Sikkim, India; Eastern China.

The genus **Glyptosternon** is represented by 3 species in the Indian region.

Key to species of genus **Glyptosternon** Mc Clelland

1. Adipose dorsal continuous with caudal rays 3
2. Adipose dorsal not continuous with caudal rays 7
3. Interdorsal equal to or 1·5 in adipose dorsal base ; pelvic origin below one third or middle of interdorsal 5

4. No interdorsal ; pelvic origin below anterior part of adipose dorsal base	*G. reticulatum* (♂)
5. Interdorsal equal to or slightly shorter than adipose dorsal base ; pelvic origin below first third of interdorsal	*G. stoliczkae* (♂)
6. Interdorsal 1·5 in adipose dorsal base ; pelvic origin below middle of interdorsal	*G. reticulatum* (♀)
7. Caudal peduncle 2 times as long as deep ; head 3·9, depth 5·4 in total length	*G. maculatum*
8. Caudal peduncle 3 times as long as deep ; head 4·7, depth 7·7 in total length	*G. stoliczkae* (♀)

417. **Glyptosternon maculatum** (Regan)

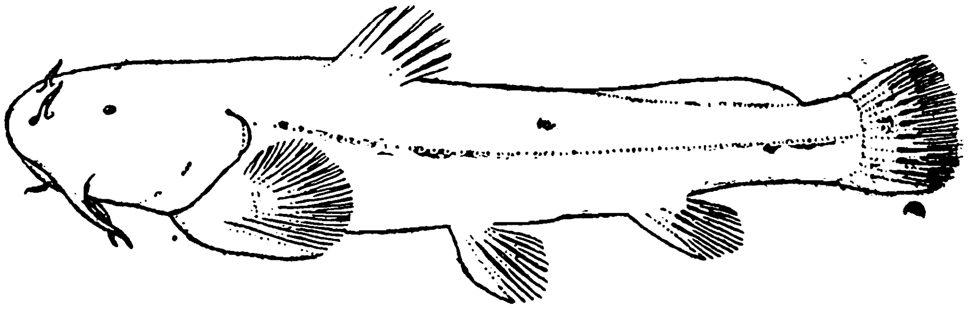
(Pl. XV, figs. 1, 2; Text-fig. 51)

1905. *Parexostoma maculatum* Regan. *Ann. Mag. nat. Hist.*, (7) **15**, p. 183 (type locality : Lhasa, Tibet).

1908. *Parexostoma stoliczkae* (*nec* Day) Stewart, *Rec. Indian Mus.*, **6**, p. 70.

1923. *Glyptosternum maculatum* Hora, *Rec. Indian Mus.*, **25**, p. 36, text-fig. 6 (Lhasa, Gyangtse, Tibet; Sikkim).

1952. *Glyptosternum maculatum* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 10.



TEXT-FIG. 51.—*Glyptosternon maculatum* (Regan) (After S. L. Hora)

D. 1/6/0; P. 1/12; V. 1/5; A. 1/5; C. 15.

Body elongate, flattened ventrally. Head covered with soft skin, depressed, 1 1 times longer than broad, 3·9; depth 5·4 in total length (3·6 and 5·1 in the standard length). Eyes minute, subcutaneous, in the anterior half of head, 19·0 in head, 7·5 in snout, 6·0 in interorbital. Mouth transverse, broadly crescentic, upper jaw the longer; gape of mouth 1·5 in width of head; lips thick, papillated. Lower labial fold not continuous. Nostrils close together, nearer to snout end than to the anterior margin of eye, separated from each other by a flap bearing the nasal barbel. Maxillary barbels with broad attachments reaching pectoral base, outer and inner mandibulars to gill openings, nasals to anterior margin of eye. Teeth pointed, in a continuous band in upper jaw, band produced backward at sides; palate edentulous. Gill openings wide, extending to below pectoral base; gill membranes, free Rayed dorsal 2·0 in head, without a strong spine; origin nearer to adipose dorsal origin than to snout and nearer to pelvic origin than to pectoral base; adipose dorsal low, long, not continuous with caudal fin, 2·6 times rayed dorsal base; interdorsal 1·2 in adipose dorsal base. Pectorals low, horizontal, broad, not reaching pelvic base, 1·4 in head, outermost ray flattened, pectinated ventrally. Pelvics 2·0 in head, not reaching anal origin; origin nearly half snout length behind last dorsal ray, nearer to anal origin than to pectoral base, outermost ray flattened, pectinated ventrally, ends away from the anal origin by a distance equal to half snout length. Anal 2·0 in head; origin half snout length before adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal truncate, 2·0 in head, 9·0 in total length; least height of caudal peduncle 2·1 in its length. Lateral line.

Skin smooth dorsally. Olivaceous with numerous irregular dark spots; caudal tipped white.

It attains 255 mm. in length; in freshwater.

Distribution.—India : Sikkim, China : Tibet; in the latitudinal and longitudinal range of 27°30′N., 88°30′E. in India and 29°—29°40′ N., 89°45′—91°15′ E. in China.

418. **Glyptosternon reticulatum** Mc Clelland

1842. *Glyptosternon reticulatum* Mc Clelland, *Calcutta J. nat. Hist.*, 2, p. 584 (type locality : Sir-i-chushma at the source of the Kabul R., Afghanistan).

1860. *Glyptosternum reticulatus* Blyth, *J. As. Soc. Bengal*, p. 153.

1932. *Glyptosternum reticulatum* Hora (*partim*), *Ann. Mag. nat. Hist.*, (10) **10**, p. 179, fig.

1933. *Glyptosternum reticulatum* Berg. (*partim*), *Poiss. des Eaux Douces de* l' *U.S.S.R.*, (3rd ed.), pt. 2, p. 597, figs. 549-551.

1934. *Glyptosternum reticulatum* Hora, *Rec. Indian Mus.*, 35, p. 287 (Chitral Valley).

1936. *Glyptosternum reticulatum* Mukerji (*partim*), *Mem. Conn.* **10**, art. 18, p. 328, fig. 1 (A small rapid stream near Kalatse; Ladak, ca 9700 ft. Leh : Ladak, 11500 ft.).

1952. *Glyptosternum reticulatum* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 8 (Chitral; Kashmir; Leh; Paghmar and Surchat rivers, Afghanistan).

D. 1/6/0; P .1/11; V. 1/5; A. 2-3/5; C. 15.

Body elongate, flattened ventrally. Head covered with soft skin, depressed, 1 1 longer than broad, 4·3—5·0; depth 7·7—8·5 in total length (7·5—8·0 in the standard length). Snout depressed, broadly rounded, 2·0 in head. Eyes minute, superior, subcutaneous, in the middle of head, 18·0—20·0 in head, 10·0 in snout, 5·0 in interorbital. Mouth transverse inferior, upper jaw longer; lips thick, papillated; gape 2·0 in width of head. Lower labial fold not continuous. Nostrils close together, nearer snout end than anterior margin of eye, separated from each other by a flap bearing the nasal barbel. Maxillary barbels with broad bases, reaching pectoral base, outer mandibulars to gill openings, inner mandibulars shorter, nasals to the anterior margin of eye. Teeth pointed, in a continuous band in upper jaw, band produced backwards at sides; palate edentulous. Gill openings wide, extending below pectoral base; gill membranes free. Rayed dorsal 1·2—2·0 in head, without a strong spine; origin nearer to adipose dorsal origin than to snout end, nearer to pelvic origin than to pectoral base; adipose dorsal long, low, 2·5—5·0 times rayed dorsal base, continuous with the caudal fin and continuous or not continuous with rayed dorsal; interdorsal 1·5 in adipose dorsal base or absent. Pectorals not reaching pelvics, low, horizontal, broad, 1 1—1·3 in head, outer most ray flattened, pectinated ventrally. Pelvics 1·3—1·7 in head; origin 2 eye diameters behind last dorsal ray, nearer to anal origin than to pectoral base, outer most ray thick flattened, pectinated ventrally, ends 2 eye diameters away from anal origin. Anal 1·3—2·0 in head; origin below middle of adipose dorsal or in the anterior one third of adipose dorsal base, nearer to pelvic origin than to caudal base. Caudal cut square, 1·7—2·0 in head, 8·6—8·8 in total length; least height of caudal peduncle 3 1 in its length. Lateral line.

Skin smooth. Brownish above lighter below.

It attains 158 mm. in length; in freshwater.

Distribution.—India : Leh, Ladak, Kashmir, Chitral.—Afghanistan; in the latitudinal and longitudinal range of 32°—35°48′ N., 71°52′—80° E in the Indian region and 34°30′ N., 69°18′ E. in Afghanistan.

419. **Glyptosternon stoliczkae** (Day)

(Text-fig. 52)

1876. *Exostoma stoliczkae* Day, *Proc. zool. Soc. Lond.*, p. 782 (type locality : Leh, Ladak).

1877. *Exostoma stoliczkae* Day, *Fish. India*, p. 502, pl. 117, fig. 3 (Leh, Ladak, and along the head waters of the Indus attaining 7 inches in length).

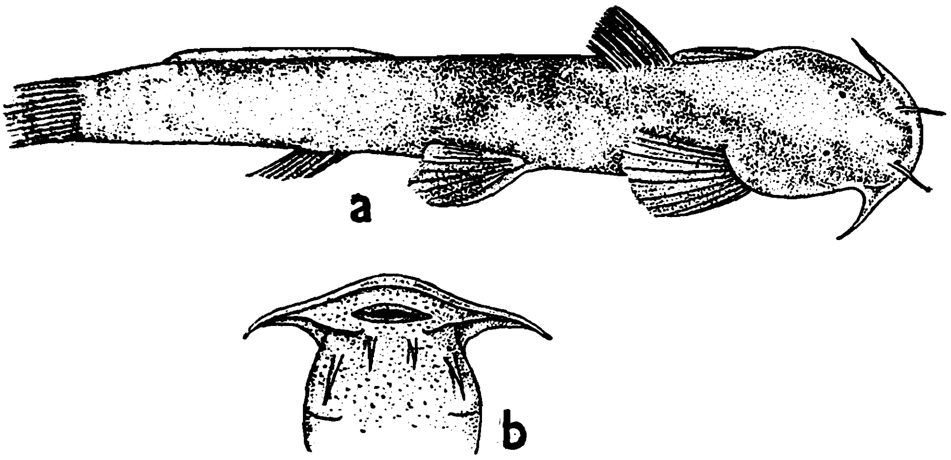
1878. *Exostoma stoliczkae* Day, *Sci. Res. 2nd Yarkand Miss., Ichthyology*, p. 1, pl. 1, fig. 1.

1889. *Exostoma stoliczkae* Day, *Fauna Brit. India*, Fish., **1**, p. 110, fig. 45.

1905. *Parexostoma stoliczkae* Regan, *Ann. Mag. nat. Hist.*, (7) **15**, p. 183.

1923. *Glyptosternum stoliczkae* Hora, *Rec. Indian Mus.*, **25**, p. 37 (Harwan, Kashmir).

1925. *Parexostoma stoliczkae* Norman, *Ann. Mag. nat. Hist.*, (9) **15**, p. 572.



TEXT-FIG. 52.—*Glyptosternon stoliczkae* (Day)

(*a*) Dorso-lateral view of head (*b*) Ventral view of head (After F. Day)

D. 1/6/0; P. 1/11; V. 1/5; A. 1/5; C. 15.

Body elongate, flattened ventrally. Head covered with soft skin, depressed, as broad as long, obtusely rounded, 4·7; depth 7·7 (4·2 and 7·2 in standard length). Snout, obtusely round, 2·0 in head. Eyes minute, superior subcutaneous, in the middle of head, 14·5 in head, 7·2 in snout, 4·0 in interorbital. Mouth inferior, transverse; lips papillated; gape of mouth 2·0 in the width of head. Lower labial fold interrupted in the middle. Nostrils close together, anterior rounded, posterior tubular, separated from each other by a flap bearing the nasal barbel. Maxillary barbels with broad basal attachments, reaching the base of pectorals, outer mandibulars to the gill opening, inner mandibulars shorter, nasals to hind border of eye. Gill openings extending ventrally to below the base of pectoral. Teeth conical, pointed; teeth in upper jaw in continuous band, produced backwards at the sides; palate edentulous. Rayed dorsal 2·4 in head; origin midway between snout end and adipose dorsal origin, with a weak spine; adipose dorsal base 3·5 times rayed dorsal, extending 1·2 times snout length behind last anal ray; interdorsal equal to or slightly shorter than adipose dorsal base; adipose dorsal continuous or non-continuous with caudal. Pectorals low, horizontal, broad, not reaching pelvics, 1·5 in head, with outer most ray flattened, pectinated ventrally. Pelvics 1·5 in head, not reaching anal origin, outer most ray flattened, pectinated ventrally, ends away from anal origin by a distance 1·3 in snout; origin 3 eye diameters behind adipose dorsal origin, nearer to anal origin than to pectoral base. Anal 2·0 in head; origin 3·0 eye diameters behind adipose dorsal origin nearer to pelvic origin than to caudal base. Caudal cut square, united or not united with adipose dorsal, 2·0 in head, 9·0 in total length; least height of caudal peduncle 3·0 in its length. Lateral line.

Skin smooth above; ventral surface tuberculated from head to pelvic bases.

It attains 178 mm. in length: in freshwater.

Distribution.—India : Leh, Ladak, Kashmir.

170. **Myersglanis** Hora & Silas

1952. *Myersglanis* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 19 (type, *Exostoma blythii* Day, orthotypic).

Body elongate, flattened ventrally to pelvic base. Head covered with soft skin, depressed. Snout depressed, broadly rounded. Eyes small, superior, subcutaneous, in the anterior half of head. Nostrils close together, separated by a flap bearing nasal barbel. 8 barbels, maxillary barbels broad based. Mouth inferior, upper jaw longer; lips thick, papillated. Lower labial fold continuous. Teeth pointed, conical, in band in both jaws; upper band continuous, not produced backwards at sides; palate edentulous. Gill openings narrow, extending below to middle of base of the first pectoral ray. No thoracic adhesive apparatus. Rayed dorsal without strong spine. A low long adipose dorsal. Interdorsal present. Paired fins horizontal, broadly rounded, first ray weak, ensheathed in thick skin, pectinated ventrally with internal soft pointed, cartilaginous rays along its anterior margin. Pelvics with 6 rays. A short anal below adipose dorsal base. Caudal lunate. Lateral line. Skin smooth. Air bladder enclosed in bone partially.

Distribution.—Nepal.

420. **Myersglanis blythi** (Day)

(Text-fig. 53)

1869. *Exostoma blythii* Day, *Proc. zool. Soc. Lond.*, p. 525 (type locality : Pharping, Nepal).

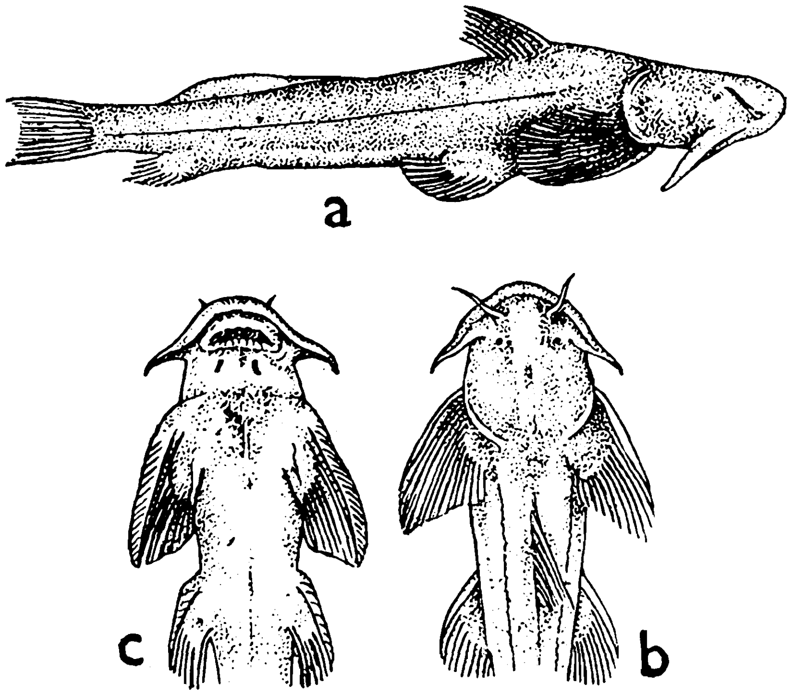
1877. *Exostoma blythii* Day (*partim*), *Fish. India*, p. 501, pl. 117, fig. 2.

1889. *Exostoma blythii* Day (partim), *Fauna Brit. India*, Fish., **1**, p. 109.

1923. *Glyptosternum blythii* Hora, *Rec. Indian Mus.*, **25**, p. 42.

1925. *Euchiloglanis blythii* Norman, *Ann. Mag. nat. Hist.*, (9) **15**, p. 574.

1952. *Myersglanis blythi* Hora & Silas, *Rec. Indian Mus.*, **49**, p. 20.



TEXT-FIG. 53.—*Myersglanis blythi* (Day) (*a*) Lateral view (*b*) Dorsal view of head and anterior part of body (*c*) Ventral view of head and anterior part of body. (After F. Day)

D.1/6/0; P.1/16; V.1/5; A.8(2/6); C.13.

Body elongate, flattened ventrally. Head 1·1, as long as broad, broadly rounded, depressed, covered with smooth skin, 4·7; depth 5·8 in total length (4·3 and 5·2 in standard length). Snout depressed, broadly rounded, 2·8 in head. Eyes subcutaneous, superior, in the anterior half of head, 14·0 in head, 5·0 in snout, 2·5 in interorbital. Mouth inferior, transverse, upper jaw longer; gape of mouth 2·2 in width of head; lips thick, papillated; lower labial fold continuous. Nostrils close together, nearer to snout end than to anterior margin of eye, separated from each other by a flap bearing nasal barbel. Maxillary barbels with broad attachments, reaching pectoral base, outer mandibulars shorter, inner mandibulars equal to eye diameter, nasals beyond hind border of eye. Teeth pointed, conical, in band in both jaws; upper band continuous, not produced backwards at the sides, palate edentulous. Gill openings narrow, extending below middle of pectoral base; gill membranes broad, free throughout. Rayed dorsal 1·5 in head, without a strong spine; origin midway between snout end and adipose dorsal origin, nearer to pelvic origin than to pectoral base; adipose dorsal low, long, 2·1 times rayed dorsal base, extending an eye diameter before last anal ray; interodorsal 1·1 times adipose dorsal base. Pectorals horizontal, broadly rounded, reaching pelvic base, 1·2 in head, without a strong spine, outer ray being thick, flattened, pectinated ventrally. Pelvics horizontal, broadly rounded, 1·3 in head, ends far away from anal by a distance equal to head length, outer ray thick, flattened, pectinated ventrally. Anal 1·4 in head; origin below middle of adipose dorsal base, nearer to caudal base than to pelvic base. Caudal lunate, 1·6 in head, 7·7 in total length, lower rays slightly prolonged; least height of caudal peduncle 1·2 in its length. Lateral line.

Skin smooth. Yellowish brown, lighter below.

It attains 73 mm. in length; in freshwater.

Distribution.—Nepal : Pharping.

171. Genus **Oreoglanis** Smith

1933. *Oreoglanis* Smith, *J. Siam Soc. nat. Hist.* Suppl., (1) 9, p. 70 (*O. siamensis* Smith, orthotypic).

Body elongate, flattened ventrally to pelvic base. Head covered with soft skin, depressed, as broad as long. Snout depressed, broadly rounded. Eyes small, superior, subcutaneous in the posterior half of head. Nostrils close together, separated by a flap bearing the nasal barbel. 8 barbels, the maxillary barbels broad-based. Mouth inferior, transverse, upper jaw longer; lips thick, papillated. Lower labial fold continuous. Teeth in upper jaw pointed, in a medianly interrupted broad band; front teeth in lower jaw long with slender base and expanded truncate tip, hind teeth like those of upper jaw; palate edentulous. Gill openings narrow, extending opposite to the level of the last pectoral ray. No thoracic adhesive apparatus. Rayed dorsal without strong spine. Adipose dorsal long low. Interdorsal present. Paired fins horizontal, broadly rounded, first ray weak, ensheathed in thick skin, pectinated ventrally with internal soft pointed cartilaginous rays along its anterior margin; pelvics with 6 rays. A short anal below adipose dorsal base. Caudal deeply lunate. Lateral line. Skin smooth. Air bladder.

Distribution.—Burma, Thailand.

421. **Oreoglanis macropterum** (Vinciguerra)

(Pl. XV, figs. 3-5)

1889. *Exostoma macropterum* Vinciguerra, *Ann. Mus. Stor. nat. Genova*, **29**, p. 253, pl. 8, fig. 5 (Mt. Catein).

1923. *Glyptosternum macropterum* Hora, *Rec. Indian. Mus.*, **25**, p. 39.

1925. *Euchiloglanis macropterus* Norman, *Ann. Mag. nat. Hist.*, (9) **15**, p. 574.

1952. *Oreoglanis macropterum* Hora & Silas, *Rec. Indian. Mus.*, **49**, p. 22.

D. 1/5/0; P. 1/19; V. 1/5; A. 2/5; C. 17.

Body elongate, flattened ventrally. Head depressed, covered with smooth skin, 1·2 times as broad as long, 4·7; depth 8·0 in total length (4·2 and 6·5 in standard length). Snout depressed, broadly rounded, 1·4 in head. Eyes superior, subcutaneous, in the posterior half of head, 9·0 in head, 5·0 in snout, 3·0 interorbital. Mouth inferior, transverse, upper jaw longer; gape of mouth 5·0 in width of head; lips thick, profusely papillated; lower labial fold continuous. Nostrils close together, nearer to snout end than to anterior margin of eye, separated from each other by a flap bearing the nasal barbel. Maxillary barbels without broad attachments at the corner of the mouth, not visible from dorsal view, equal to gape of mouth, not reaching pectorals, outer mandibulars below corner of mouth, reaching pectoral base, inner mandibulars shorter, 2·0 times eye diameter, nasals not reaching anterior margin of eye. Teeth conical, pointed in upper jawcompr; essed, with truncate apices in lower jaw; palate edentulous. Gill openings narrow, extending opposite to middle of pectoral base. Rayed dorsal 1·7 in head, without a strong spine; origin nearer to adipose dorsal origin than to snout end, nearer to pelvic origin than to pectoral base; adipose dorsal low, long, its base 3·5 times rayed dorsal base, extending nearly a snout length behind last anal ray; interdorsal equal to rayed dorsal base, 3·5 in adipose dorsal base. Pectorals horizontal, fan-shaped, inner rays reaching nearly rayed dorsal base extending beyond pelvic origin, 1·2 times head, without a strong spine with the outer ray thick, flattened, pectinated ventrally. Pelvics horizontal, equal to head; origin below middle of rayed dorsal base, outer ray thick, flattened, ventrally pectinated, ends away from anal origin by distance equal to snout length. Anal 2·5 in head; origin below middle of adipose dorsal base, nearer to caudal base than to pelvic origin. Caudal deeply lunate, lower rays slightly elongated, 1·4 in head, 6·5 in total length; least height of caudal peduncle 2·8 in its length. Lateral line.

Skin smooth. Brownish—yellow, lighter below.

It attains 67 mm. in length; in freshwater.

Distribution.—Burma : Mt. Catein.

172. Genus **Pseudecheneis** Blyth

1860. *Pseudecheneis* Blyth, *J. As. Soc. Bengal*, **29**, p. 154 (type, *Glyptosternon sulcatus* Mc Clell., orthotypic).

Body elongate, ventrally flattened to pelvics. Head depressed, covered with skin. Snout depressed. Eyes small, superior, subcutaneous. Nostrils close together, separated by a nasal barbel. 4 pairs of barbels, all shorter than head. Mouth, small, inferior, transverse; upper jaw longer; lower lip papillated medianly. Teeth villiform in band in jaws; palate edentulous. A broad median longitudinal groove on head. Occipital process not reaching basal bone of dorsal. Gill openings narrow, extending a little below first pectoral ray, but not ventrally further; gill membranes confluent with broad isthmus. A sucker-like, oval, thoracic apparatus with about 14 transverse muscular folds. A rayed dorsal with a weak spine roughened internally, smooth externally; on adipose dorsal. Paired fins horizontal, broadly rounded, with the first ray weak, ensheathed in thick skin, pectinated ventrally, bearing soft, internal, pointed, cartilaginous rays along its anterior margin. Pelvics with 6 rays. Anal short. Caudal emarginate. Lateral line. Skin smooth. Air bladder with rounded lateral portions enclosed in bone.

Distribution.—India, Nepal.

The genus **Pseudecheneis** is represented by a single species in the Indian region.

422. **Pseudecheneis sulcatus** (Mc Clelland)

(Pl. XV, fig. 6)

1842. *Glyptosternon sulcatus*, Mc Clelland, *Calcutta J. nat. Hist.*, **2**, p. 587, pl. 6, lower figs. (type locality : Khasi Hills).

1864. *Pseudecheneis sulcatus* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 264 (Khasya Mts.; type of the species 3-2/3 inches long).

1877. *Pseudecheneis sulcatus* Day, *Fish. India*, p. 500, pl. 116, fig. **1** (Darjeeling and Khasya hills; 7″-9″ in length; specimen figured was from Darjeeling).

1889. *Pseudecheneis sulcatus* Day, *Fauna Brit. India*, Fish., **1**, p. 107.

1937. *Pseudecheneis sulcatus* Hora, *Rec. Indian Mus.*, **39**, p. 348.

1938. *Pseudecheneis sulcatus* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, pp. 7, 106 (Riyang R., 800-1600 ft. elevation).

1950. *Pseudecheneis sulcatus* Menon, *Rec. Indian Mus.*, **47**, p. 223 (Kokha nallah about a mile up its confluence with the Kosi, Nepal).

Vernacular names.—Nepal : *Kabri*. Burma : *Nga-hpai*.

D. 1/6/0; P. 1/13; V 1/5; A. 9-13 (2-4/7-9); C. 17.

Body elongate, ventrally flattened to pelvics. Head depressed, as long as broad, 6·0 in total length; depth 7·5 in total length (4·8 and 5·8 in standard length). Snout

1·7 in head. Eyes small, superior, subcutaneous, in the posterior half of head, midway between hind edge of opercle and posterior nostril, 12·5 in head, 7·0 in snout, 4·0 in interorbital. Nostrils close together, separated by a barbel. Mouth small, inferior, transverse, upper jaw longer; gape of mouth 4·6 in width of head, lower lip papillated medianly. Teeth villiform in band in jaws; none on palate. Median longitudinal groove on head broad, reaching midorbit. Occipital process nearly as long as broad, nearly touching basal base of dorsal. Maxillary barbels broad based, reaching anterior margin of eye, 3·0 in head, outer mandibulars short, equal to width of mouth, inner mandibulars equal to eye diameter, nasals equal to eye diameter. Gill openings narrow, extending a little below first pectoral ray but not extending ventrally further; gill opening separated from each other by a distance 3·5 times gape of mouth; gill membranes confluent with broad isthmus. An sucker-like, oval, thoracic adhesive apparatus with about 14 transverse muscular folds or lamellae. Rayed dorsal equal to head, with a weak spine roughened internally, smooth externally; origin nearer to adipose dorsal origin than to snout end; adipose dorsal base 1·7 times rayed dorsal base, extending 2·5 eye diameters behind last anal ray; interdorsal 2·5 in adipose dorsal base. Pectorals low, reaching beyond pelvic origin, 1·4 times head, with a flattened spine, serrated internally in its lower half, often pectinated ventrally. Pelvics equal to head, reaching anal papilla, not reaching anal fin; origin opposite rayed dorsal origin, nearer to pectoral base than to anal origin. Anal 1·3 in-head; origin opposite adipose dorsal origin, nearer to pelvic origin than to caudal base. Caudal emarginate, lobes pointed, lower lobe the longer, equal to head, 6·0 in length; least height caudal peduncle 4·3 in its length. Lateral line.

Skin smooth. Blackish with large irregular yellowish blotches; fins yellow with black bands.

It attains 200 mm. in length; in freshwater.

Distribution.—India : Riyang river, Darjeeling, West Bengal, Khasi hills, Assam. Nepal : the Kosi river.

xix. Subfamily *SISORINAE*

A series of osseous plates from the dorsal fin to root of caudal. Upper most caudal ray much elongated, equal to total length from snout end to the caudal base. No teeth on jaws, vomer and palatine.

The subfamily *SISORINAE* is represented by a single genus in the Indian region.

173. Genus **Sisor** Hamilton

1822. *Sisor* Hamilton, *Fish. Ganges*, p. 379 (type, *S. rhabdophorus* Ham., orthotypic).

Body elongate, depressed, with a long tapering tail. Head depressed, spatulate, partially osseous, rough superiorly. Eyes minute with an extensible mascular flap on its upper edge. Nostrils round, open, close together, the posterior separated by a lobe. 6 pairs of barbels, one pair of maxillary and 5 pairs mandibular. Mouth inferior, small, transverse, upper jaw the longer. Teeth absent. A median longitudinal groove on head. Occipital process reaching basal bone of dorsal. Humeral process extending beyond pectoral base, supporting ventrally the abdominal edges. Supra-scapular as long as occipital process. Gill openings narrow; gill membranes united with broad isthmus. A short spineless rayed dorsal. Adipose dorsal in the form of a spine. Pectorals horizontal, with a flattened spine, serrated on both edges. Pelvics with 7 rays. Anal short, with 6 rays. Caudal slightly forked, with the upper ray elongated. Lateral line with a series of small, rough bony plates. A series of bony plates from the basal bone of dorsal to the caudal base; the first largest, trilobate; 5 plates along each side of dorsal base; 9 plates behind last dorsal ray, each with a sharp, central, longitudinal ridge, and the 9th plate having a short, immovable, backwardly directed spine (considered by some as the second dorsal); a series of 12 bony rings on tail, commencing behind 9th spiny dorsal plate, each with a dorsal and lateral edge. Air bladder enclosed in bony capsule. Branchiostegals 4.

Distribution.—India, Pakistan.

423. **Sisor rhabdophorus** Hamilton

(Text-fig. 54)

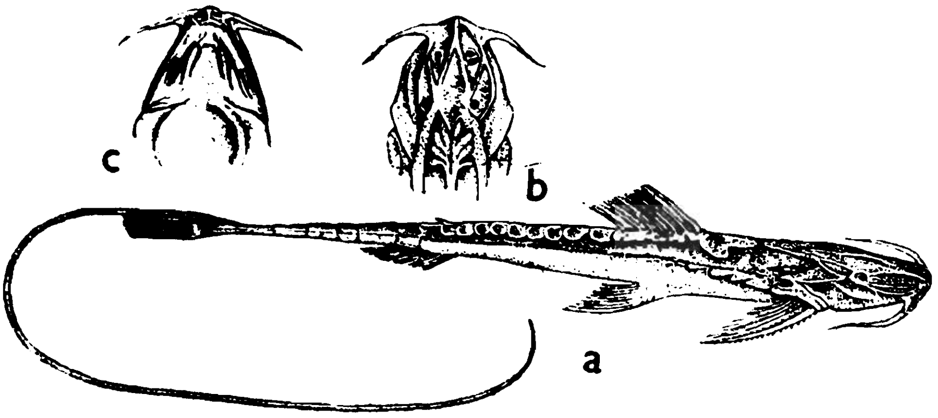
1822. *Sisor rhabdophorus* Hamilton, *Fish. Ganges*, pp. 208, 379 (type locality : northern rivers of Bengal and Bihar).

1864. *Sisor rhabdophorus* Günther, *Cat. Fish. Brit. Mus.*, **5**, p. 262.

1877. *Sisor rhabdophorus* Day, *Fish. India*, p. 291, pl. 115, figs. 1, 1*a*, 1*b* (Sind, Ganges and Jumna rivers in Northern India, Bengal and Bihar, Delhi).

1889. *Sisor rhabdophorus* Day, *Fauna Brit. India*, Fish., **1**, p. 105, fig. 43.

1938. *Sisor rhabdophorus* Shaw & Shebbeare, *J. roy. As. Soc. Bengal, Sci.*, **3**, pp. 7, 107 (Siliguri).



TEXT-FIG. 54.—*Sisor rhabdophorus* Hamilton (*a*) Lateral view (*b*) Dorsal view of head (*c*) Ventral view of head (After F. Day)

Vernacular names.—INDIA : *Chennuah.* PAKISTAN : *Kir-ri-dee*, Sind.

B. 4; D. 1/6; P. 1/8; V. 7; A. 6(2/4); C. 11.

Body elongate, depressed, with a long tapering tail, flattened ventrally to the pelvics. Head depressed, spatulate, 1·2—1·5 times longer than broad, 5·5; depth 12·0 in total length minus caudal filament (5·0 and 11·0 in standard length minus caudal filament); caudal filament equal to length from snout end to the caudal base; frontal and parietal portions of head with longitudinal ridges converging towards occipital process, the remaining portion of head covered with thin skin. Snout pointed, upper profile slightly arched, 2·1 in head. Eyes small, pupil transversely oval, nearer to gill opening than to snout end, with an extensive mascular flap on its upper edge, 16·0 in head, 7·0 in snout, 2·0—2·5 in interorbital. Nostrils round, open, close together, separated by a small lobe, nearer to eye than to snout end or midway between them. Mouth small, transverse, inferior, upper jaw longer; lower lip produced at each angle of mouth into a long reflected channel-like flap ending posteriorly in barbel-like process; gape of mouth 4·0 in the width of head. Teeth absent. Median longitudinal groove on head reaching base of occipital process. Occipital process not reaching basal bone of dorsal; humeral process extending beyond pectoral base, supporting ventrally the abdominal edges. Suprascapular as long as occipital. Gill opening narrow, extending to ventral surface, separated from each other by a distance 1/3 width of head. Barbels 12, a pair of maxillaries and 5 pairs of mandibulars; maxillary barbels with broad bases, reaching pectoral base; of the 5 mandibular pairs, the longest pair originating below lower lip, extending nearly to gill openings, the intermediate pair shorter, placed close below the first median pair and the remaining 3 pairs shorter, originating between the labial flaps on either side in a transverse row across the chin below the upper 2 pairs of mandibular barbels. Rayed dorsal 1·5—1·6 in head, with a weak anteriorly serrated spine; origin nearer to snout end than to anal origin, nearer to pelvic origin than to pectoral base; adipose dorsal absent. Pectorals low, equal to head, not reaching pelvics, with a flattened spine serrated on both edges, 1·3 in head. Pelvics 1·4 in head, not reaching anal; origin below middle of rayed dorsal base, nearer to pectoral base than to anal origin. Anal 3·0 in head, its base 1·3 in rayed dorsal base; origin below the 8th postdorsal bony plate, nearly to pelvic origin than to caudal base. Caudal slightly forked, 1·7 in head, 9·3 in total length excluding caudal filament, upper ray strong, prolonged, nearly as long as length of body; least height of caudal peduncle 16·0 in its length. Lateral line with a series of small, rough bony plates. A series of bony plates from the basal bone of dorsal to the caudal base; the first and the largest trilobate, with the central lobe projecting forward but not touching occipital process, 5 plates along each side of dorsal base; 9 dorsal plates behind last dorsal ray nearly opposite to anal origin, each with a central sharp longitudinal ridge, the ninth plate having a short immovable backwardly directed spine (considered by Hamilton as a second dorsal fin); 12 bony rings on tail commencing behind the ninth spiny dorsal plate, each with a dorsal and lateral sharp edge, the remaining portion of body naked.

Blackish above, lighter below.

It attains 200 mm. in length excluding the caudal filament; in freshwater.

Distribution.—India : The Jamuna at Delhi, Bihar, Siliguri, northern rivers of Bengal. Pakistan : Sind.

A Field key to Division SILURI of Order CYPRINIFORMES (Class TELEOSTOMI) with a table of identification of suborder, superfamily, families, subfamilies, genera, subgenera, species and subspecies of the Indian Region.

1.	Skin naked or covered with bony plates ..	Division SILURI Suborder *SILUROIDEI* Superfamily SILUROIDAE	
2.	Skin scaly or naked, never with bony plates	Division CYPRINI	
3.	Second rayed dorsal or procurrent caudo-dorsal present	5	
4.	Second rayed dorsal or procurrent caudo-dorsal absent	7	
5.	Two short anal fins, 2nd united with caudal; head broad, depressed	Family CHACIDAE Genus **Chaca** (*C. chaca*)	
6.	One long anal fin united with caudal; head neither broad nor depressed	Family PLOTOSIDAE Genus **Plotosus**,	153
7.	First dorsal long (23-95 rays) ..	Family CLARIIDAE,	136
8.	First dorsal short (2-22 rays) (except in genera **Ailia** and **Ailiichthys** where dorsal is absent). ..	9	
9.	Anal long (24—93 rays)	11	
10.	Anal short (6—23 rays) (except genus **Pseudobagrus** with 20-28 rays)	15	
11.	Adipose dorsal absent ; first dorsal spineless	13	
12.	Adipose dorsal present; first dorsal with spine (except in genera **Ailia** and **Ailiichthys** where dorsal is absent	Family SCHILBEIDAE,	155
13.	One or two pairs of barbels; nasal barbels absent ..	Family SILURIDAE,	183
14.	Four pairs of barbels ; nasal barbels present ..	Family HETEROPNEUSTIDAE, Genus **Heteropneustes**,	143

15.	Nostrils separated by a valve ; 1 or 3 pairs of barbels	Family TACHYSURIDAE,	33
16.	Nostrils separated by a barbel or a lobe ; 3-4 pairs of barbels or 6 pairs of barbel-like processes	17	
17.	Dorsal fin spineless .	Family OLYRIDAE, Genus **Olyra**	145
18.	Dorsal fin with spine .. .	19	
19.	Gill membranes united with isthmus (except in genus **Bagarius** where it is free)	21	
20.	Gill membranes not united with isthmus	23	
21.	Nostrils close together or slightly wide apart	201 Family SISORIDAE	
22.	Nostrils well separated ..	25 Family AKYSIDAE Genus **Akysis**	
23.	Palate edentulous ; dorsal and pectoral spines weak	27 Family AMBLYCEPIDAE Genus **Amblyceps**	
24.	Palate toothed ; dorsal and pectoral spines strong .	83 Family BAGRIDAE	
25.	Anal rays 11 ; nasal barbels more than length of head ; rayed dorsal origin nearer to adipose dorsal origin than to snout end	*A. prashadi*	
26.	Anal rays 9; nasal barbels ½ length of head ; rayed dorsal origin midway between adipose dorsal origin and snout end .	*A. pictus*	
27.	Snout subtruncate ; lower jaw longer ; caudal deeply forked ; pelvic origin ½ snout length behind last dorsal ray ; least height of caudal peduncle 1·2—1·6 in its length ; adipose dorsal non confluent with caudal	*A. mangois*	
28.	Snout spatulate ; upper jaw long ; caudal cut square ; pelvic origin head length behind last dorsal ray ; least height of caudal peduncle 1·9 in its length; adipose dorsal confluent with caudal ..	*A. murray-stuartii*	

29. 2 or 4 barbels ..	31
30. 6 barbels	33
31. Two osseous maxillary barbels	39 Genus **Osteogeniosus**
32. Two small mandibulary barbels (maxillary barbels vestigal) ..	Genus **Batrachoceephalus** (*B. mino*)
33. Palate toothed	41 Genus **Tachysurus**
34. Palate edentulous	35
35. Mouth wide, extending beyond anterior border of eye	Genus **Ketengus** (*K. typus*)
36. Mouth narrow, ending before anterior border of eye	37 Genus **Hemipimelodus**
37. Median longitudinal groove reaching base of occipital process; occipital process as broad as long at its base; dorsal spine strong, eyes 4·5—5·0 in head; maxillary barbels shorter than head	*H. jatius*
38. Median longitudinal groove not reaching base of occipital process; occipital process longer than wide at base; dorsal spine weak and thin; eyes 7·0 in head; maxillary barbels as long as head	*H. tenuispinis*
39. Pelvic origin opposite last dorsal ray; occipital process 3·0 times as long as broad at its base; length of head 4·7 in total length ..	*O. sthenocephalus*
40. Pelvic origin ½ eye diameter behind last dorsal ray; occipital process 2·5 times as long as broad at its base; length of head 4·2—4·5 in total length	*O. militaris*
41. Palatine teeth in one or two patches on either side	43
42. Palatine teeth in 3 patches on either side ..	81
43. Palatine teeth in one patch on either side	45
44. Palatine teeth in two patches on either side ..	73

45. Palatine teeth villiform or conical 47

46. Palatine teeth globular or granular 59

47. Median longitudinal groove reaching base of occipital process 49

48. Median longitudinal groove not reaching base of occipital process 51

49. Palatine patch triangular, as large as eye, separated from premaxillary band of teeth by a distance less than its length and separated from each other by a distance $\frac{1}{2}$— $\frac{3}{4}$ of its length *T. sumatranus*

50. Palatine patch oval, equal to eye, separated from premaxillary band of teeth by a distance twice its length and separated from each other by a distance 2·5 times of its length *T subrostratus*

51. Palatine patch triangular. *T. nenga*

52. Palatine patch oval or ovoid 53

53. Palatine patch equal to or smaller than eye 55

54. Palatine patch larger than eye 57

55. Palatine patch smaller than eye, separated from premaxillary band of teeth by a distance equal to its length and from each other by a distance twice its length, snout spatulate *T. burmanicus*

56. Palatine patch equal to eye, separated from premaxillary band of teeth and from each other by a distance half its length; snout normal *T. caelatus*

57. Snout much produced, fleshy, extending beyond mouth ; premaxillary band of teeth 3 times as long as broad; palatine patch separated from premaxillary band of teeth and from each other by a distance nearly half its length *T. acutirostris*

58. Snout normal; premaxillary band of teeth 8 times as long as broad; palatine patch separated from premaxillary band of teeth by a distance 1/7 of its length and from each other by a distance 1/12 of its length *T. parvipinnis*

59. Median longitudinal groove on head reaching base of occipital process 61

60. Median longitudinal groove on head not reaching base of occipital process 69

61. Premaxillary band of teeth divided in the middle; palatine patch placed for backwards *T. satparanus*

62. Premaxillary band of teeth continuous ; palatine patch not placed far backwards 63

63. Premaxillary band of teeth 5 times as long as broad; palatines patch round, or kidney-shaped, 1/2 eye diameter or longer than eye *T. gagora*

64. Premaxillary band of teeth 6—10 times as long as broad; palatine patch elongate, oval or semiovate, larger than eye 65

65. Premaxillary band of teeth 10 times as long as broad; palatine patch elongate or oval .. *T. malabaricus*

66. Premaxillary band of teeth 6—8 times as long as broad; palatine patch pyriform or ovate 67

67. Palatine patch pyriform, placed well forwards, converging anteriorly; maxillary barbels reaching beyond pectoral base *T. platystomus*

68. Palatine patch convexly ovate, not placed well forwards, converging posteriorly; maxillary barbels as long as head, not reaching pectoral base .. *T. jella*

69. Premaxillary band of teeth 7·5 times as long as broad; palatine band pyriform, converging posteriorly, separated from premaxillary band of teeth by a distance 1/3 its length and from each other by a distance 3/4 its length *T. macronotacanthus*

70. Premaxillary band of teeth 4-5 times as long as broad; palatine patch elongate, semitriangular or oval, parallel along median line 71

71. Premaxillary band of teeth 4 times as long as broad; palatine patch semitriangular, longitudinal, parallel medianly, separated from the premaxillary band of teeth by a distance equal to the width of the premaxillary band *T. maculatus*

72. Premaxillary band of teeth 5 times as long as broad; palatine patch oval, separated from the premaxillary band of teeth by a distance 2·5 times the width of the premaxillary band *T. arius*

73. Vomero-palatine teeth villiform or conical .. 75

74. Vomero palatine teeth globular or granular 77

75. Vomerine and palatine patches transverse, oval, confluent or separate with each other, meeting or not meeting medianly; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length; palatine patches separated from each other posteriorly by a distance 2 times the length of vomerine patch *T. sagor*

76. Vomerine and palatine patches transverse, not confluent with each other medianly; vomerine patch separated from the premaxillary band of teeth by distance 1·5 times its length and from each other by a distance equal to its length; the palatine patch separated from the vomerine patch by a distance less than the length of vomerine patch and from each other posteriorly by a distance less than its length .. *T. sona*

77. Premaxillary band of teeth 4—6 times as long as broad; vomero-palatine patch oval, or pear-shaped; vomerine patch separa-

ted from the premaxillary band of teeth by a distance equal to or half its length and from each other by a distance 1·5—2·0 times its length; palatine patch separated from vomerine patch by a distance equal to or 1/3 the length of vomerine patch and from each other by a distance 3/4, 1/5 or 1/10 of its length; vomerine patch 3·5 in palatine patch 78

78. Premaxillary band of teeth 8 times as long as broad; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length and separated from each other by a distance 2·0 times its length; palatine patch separated from the vomerine patch by a distance equal to the length of the vomerine patch and from each other by a distance 3/4 of its length; vomerine patch 2·0 in palatine patch *T. dussumieri*

79. Premaxlliary band of teeth 4 times as long as broad; vomerine patch separated from the premaxillary band of teeth by a distance 1/2 of its length and from each other by a distance 1·5 times its length; palatine patch separated from the vomerine patch by distance 1/3 of the length of vomerine patch and from each other by a distance 1/5 of its length .. *T. nella*

80. Premaxillary band of teeth 6 times as long as broad; vomerine patch separated from the premaxillary band of teeth by a distance equal to its length and from each other by a distance twice its length; palatine patch separated from the vomerine patch by a distance equal to the length of the vomerine patch and from each other by a distance 1/10 of its length. *T. crossocheilus*

81. 3 vomero-palatine patches, 2 small in front and a larger behind, placed close together; premaxillary band of teeth 8 times as long as broad; occiptial keel crenulated .. .. *T. thalassinus*

82. 3 vomero palatine patches, 2 small in front and a longer one behind placed far apart ; premaxillary band of teeth 5·5 times as long as broad ; occipital keel serrated	*T serratus*
83. Eye subcutaneous; 6 barbels	85
84. Eyes non-subcutaneous ; 8 barbels	87
85. Dorsal and pectoral spines stout and firm; palatine teeth molariform	Genus **Rita**, 129
86. Dorsal and pectoral spines neither stout nor firm; palatine teeth villiform ..	Genus **Rama** (*R. rama*)
87. Anal rays less than 20; anal base less than or equal to adipose dorsal base	Genus **Mystus**, 89
88. Anal rays 20 or more than 20; anal base longer than adipose dorsal base (extra-limital species excluded)	Genus **Pseudobagrus** (*P. brachysoma*)
89. A distinct separate interneural shield	Subgenus **Aorichthys**, 91
90. No distinct separate interneural shield ..	Subgenus **Mystus**, 97
91. Snout spatulate	93
92. Snout normal	*Mystus* (*A.*) *leucophasis*
93. Adipose dorsal origin close behind last dorsal ray; base 3·4 times rayed dorsal base, extending to caudal base	*Mystus* (*A.*) *rufescens*
94. Adipose dorsal origin 2·0 eye diameters behind last dorsal ray; base equal to or slightly. longer than rayed dorsal base, extending opposite to last anal ray	95
95. A black spot of the size of eye on tne posterior and interior portion Or adipose dorsal; maxillary barbels extending beyond caudal base ..	*Mystus* (*A.*) *aor*

96.	A black spot less than half eye diameter at the posterior end of the adipose dorsal base; maxillary barbels extending to pelvics	*Mystus* (*A.*) *seenghala*
97.	Occipital process reaching basal bone of dorsal	99
98.	Occipital process not reaching basal bone of dorsal	117
99.	Median longitudinal groove on head reaching base of occipital process	101
100.	Median longitudinal groove on head not reaching base of occipital process	109
101.	Interdorsal space present	103
102.	Interdorsal space absent	107
103.	Adipose dorsal base equal to rayed dorsal base; interdorsal 1·2 in adipose dorsal base	*Mystus* (*M.*) *oculatus*
104.	Adipose dorsal base 1·3—1·4 times rayed dorsal base; interdorsal 2·4—3·0 in adipose dorsal base	105
105.	Interdorsal 2·4 in adipose dorsal base ; a single brown longitudinal band; maxillary barbels reaching end of pelvics	*Mystus* (*M.*) *armatus*
106.	Interdorsal 3·0 in adipose dorsal; 5 black longitudinal bands; maxillary barbels reaching end of anal	*Mystus* (*M.*) *tengara*
107.	Pelvic origin half eye diameter behind last dorsal ray, nearer to anal origin than to pectoral base; maxillary barbels extending to anal origin.	*Mystus* (*M.*) *bleekeri*
108.	Pelvic origin below last dorsal ray, equidistant between anal origin and pectoral base; maxillary barbels extending beyond caudal base	*Mystus* (*M.*) *cavasius*
109.	Interdorsal space present	111
110.	No interdorsal space	115

111.	Adipose dorsal base extending 1·5 eye diameters behind last anal ray; base 1·5 times rayed dorsal base	*Mystus (M.) montanus*
112.	Adipose dorsal base extending- opposite to last anal ray; base equal to rayed dorsal base	113
113.	Maxillary barbels reaching pelvic base or anal origin; 5—7 narrow longitudinal bands	*Mystus (M.) vittatus vittatus*
114.	Maxillary barbels reaching end of anal of middle of caudal peduncle; a single longitudinal band.	*Mystus (M.) vittatus dibrugarensis*
115.	Adipose base extending ½ an eye diameter behind last anal ray; maxillary barbels extending beyond anal origin.	*Mystus (M.) pulcher pulcher*
116.	Adipose dorsal base extending opposite last basal ray; maxillary barbels reaching end of pelvics	*Mystus (M.) pulcher horai*
117.	Median longitudinal groove on head reaching occipital process	119
118.	Median longitudinal groove on head not reaching occipital process	125
119.	Rayed dorsal origin equidistant between snout end and caudal base	*Mystus (M.) peguensis*
120.	Rayed dorsal origin nearer to snout end than to caudal base	121
121.	Anal origin below middle or adipose dorsal base; interdorsal 2·0 in adipose dorsal base	*Mystus (Mystus) menoda*
122.	Anal origin opposite adipose dorsal origin; interdorsal equal to or 1·5 times adipose dorsal base	123
123.	Maxillary barbels reaching middle or end of pelvics; least height of caudal peduncle 1·4 in its length; 10 black round spots on lateral line	*Mystus (M.) punctatus*
124.	Maxillary barbels reaching caudal base; least height caudal peduncle 2·0—2·3 in its length; no black round spots along lateral line	*Mystus (M.) microphthalmus*

125.	Interdorsal 2·0 times adipose dorsal base; occipital process half longer than wide at its base	*Mystus* (*M.*) *gulio*
126.	Interdorsal 1·0—1·5 adipose dorsal base; occipital process 2—3 times as long as broad	127
127.	Adipose dorsal base equal to or 1·3 times interdorsal : occipital process 3 times as long as broad	*Mystus* (*M.*) *keletius*
128.	Adipose dorsal base 1·5 times interdorsal; occipital process 2 times as long as broad	*Mystus* (*M.*) *malabaricus*
129.	Mandibular teeth villiform or cardiform	*R. kuturnee*
130.	Mandibular teeth posteriorly molariform ..	131
131.	Palatine teeth in 2 widely separate patches	*R. rita*
132.	Palatine teeth in 2 closely set patches	133
133.	Palatine patches converging anteriorly; dorsal spine longer than head, serrated anteriorly	*R. chrysea*
134.	Palatine patches not converging anteriorly; dorsal spine shorter than head, entire anteriorly	*R. pavimentata*
135.	Eyes absent; pectoral vestigeal; accessory dendritic apparatus not well developed	Genus **Horaglanis**
136.	Eyes present; pectoral normal; accessory dendritic apparatus normal	Genus **Clarias**, 137
137.	Distance between occipital process and dorsal origin 4·5—5·5 in distance between snout end and occipital process	*C. batrachus*
138.	Distance between occipital process and dorsal origin 2·5—3·5 in distance between snout end and occipital process	139
139.	Snout pointed; nasal barbels less than half length of head to occipital process; pectoral spine strongly serrated externally; distance between occipital process and dorsal origin 7·5 in distance between snout end and occipital process ..	*C. dayi*

140. Snout broad ; nasal barbels longer than half length of head to occipital process; pectoral spine strongly serrated or roughened only externally ; distance between occipital process and dorsal origin 2·6-3·5 in distance between snout end and occipital process 141

141. Pectoral spine strongly serrated externally ; occipital process 2·5 times as broad as long; vomerine band as broad as premaxillary band *C. dussumieri*

142. Pectoral spine roughened externally, occipital process 1·5 times as broad as long ; vomerine band narrow not as broad as premaxillary band *C. brachysoma*

143. Anal confluent with caudal ; dorsal fin with 8 rays. *H. microps*

144. Anal non-confluent with caudal ; dorsal fin with 6-7 rays *H. fossilis*

145. Caudal entire with central rays prolonged (neither lanceolate nor forked) ; least height of caudal peduncle 2·7 in its length ; lower jaw longer ; pelvics reaching anal *O. laticeps*

146. Caudal lanceolate or forked ; least height of caudal peduncle 1·3—2·2 in its length ; jaws subequal or upper jaw longer ; pelvics not reaching anal 147

147. Caudal lanceolate. 149

148. Caudal deeply forked 151

149. Least height of caudal peduncle 2·2 in its length ; anal rays 23 *O. longicaudata*

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152.	Adipose dorsal not continuous with caudal ; rayed dorsal origin nearer to adipose dorsal origin than to snout end ; upper jaw longer ; least height of caudal peduncle 1·8 in its length ;anal rays 17—18	*O. kempi*
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201.	A series of osseous plates from the dorsal fin to root of caudal ; uppermost caudal ray much elongated, more than half length of body ; no teeth on jaws, vomer and palatine ; adipose dorsal in the form of spines	Subfamily *SISORINAE* Genus **Sisor** (*S. rhabdophorus*)
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303. Gill openings greatly restricted extending below to above level of the base of first pectinated ray of pectoral ; caudal deeply forked ; snout pointed ; branched pectoral rays 10 *E. berdmorei*

304. Gill openings extending below to level of the base of first pectinated ray of pectoral ; caudal deeply lunate ; snout broadly rounded ; branched pectoral rays 10—13 . 305

305. Adipose dorsal confluent with rayed dorsal fin ; adipose dorsal extending snout length beyond last anal ray ; branched pectoral rays 13 *E. labiatus*

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316. Caudal peduncle 3 times as long as deep ; head 4·7, depth 7·7 in total length *G. stoliczkae* (♀)

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PLATE I

Akysis prashadi Hora

Fig. 1. Lateral view

Fig. 2. Ventral view of head and anterior part of body (*After* B. Prashad & D. D. Mukerji)

Amblyceps murray-stuarti Chaudhuri

Fig. 3. Lateral view

Fig. 4. Dorsal view of head

Fig. 5. Ventral view of head and anterior part of body (After B. L. Chaudhuri)

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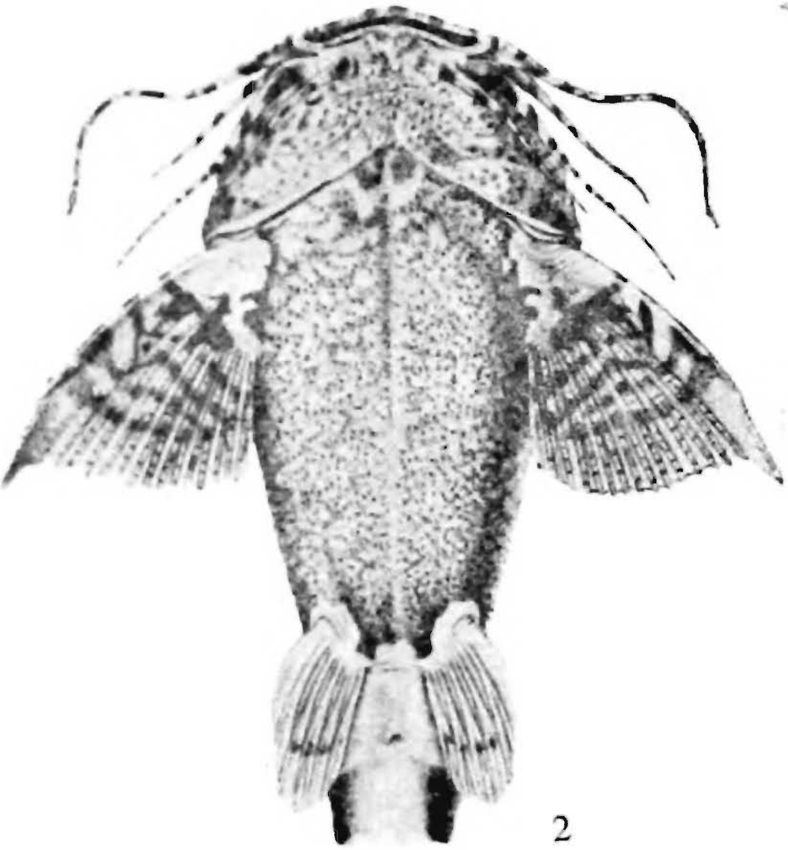

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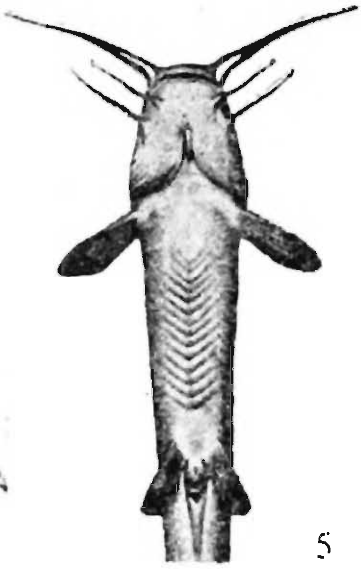

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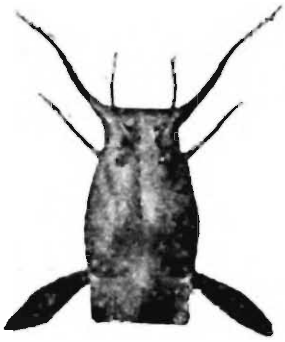

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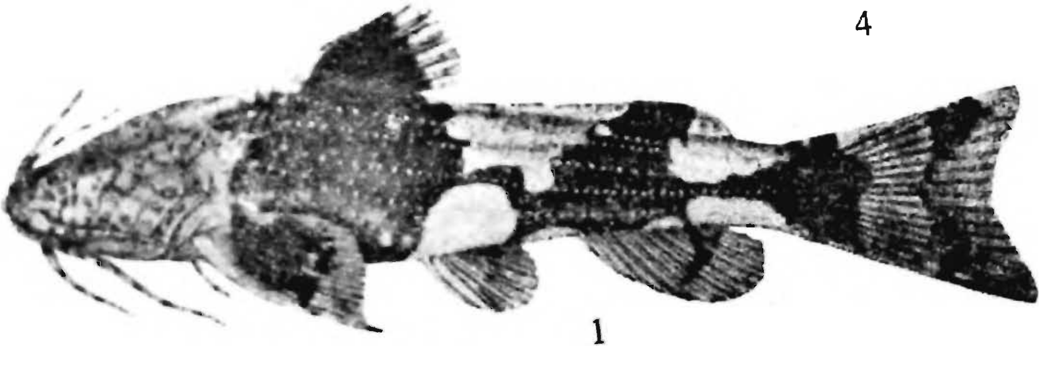

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PLATE II

Mystus (Mystus) pulcher horai Jayaram

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body
(After K. C. Jayaram)

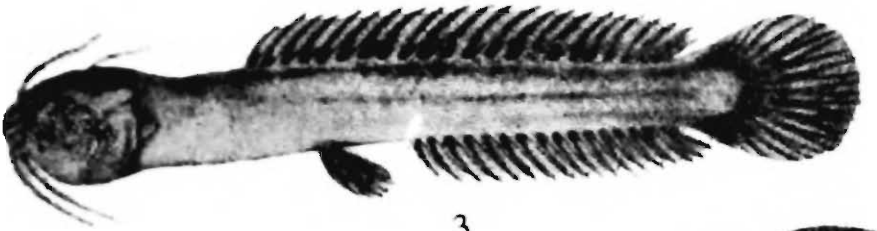
Horaglanis krishnai Menon

Fig. 3. Lateral view

Fig. 4. Dorsal view of head and anterior part of body

Fig. 5. Ventral view of head and anterior part of body
(After A. G. K. Menon)

PLATE II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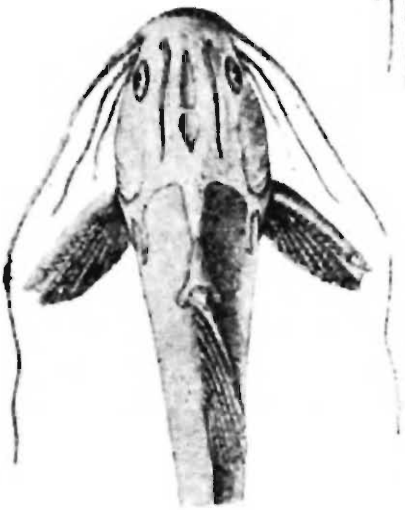
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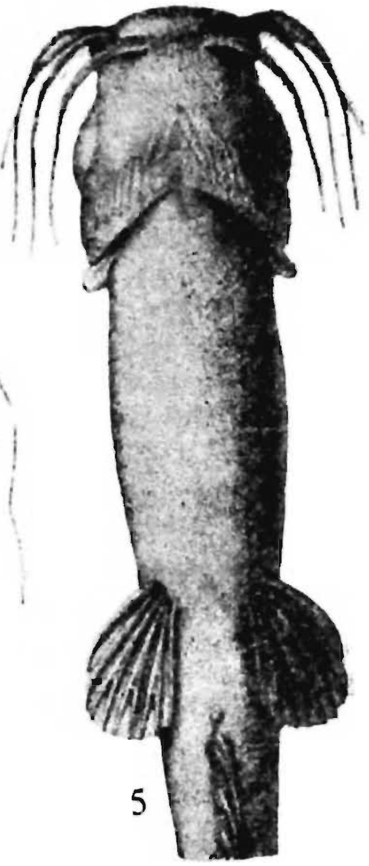
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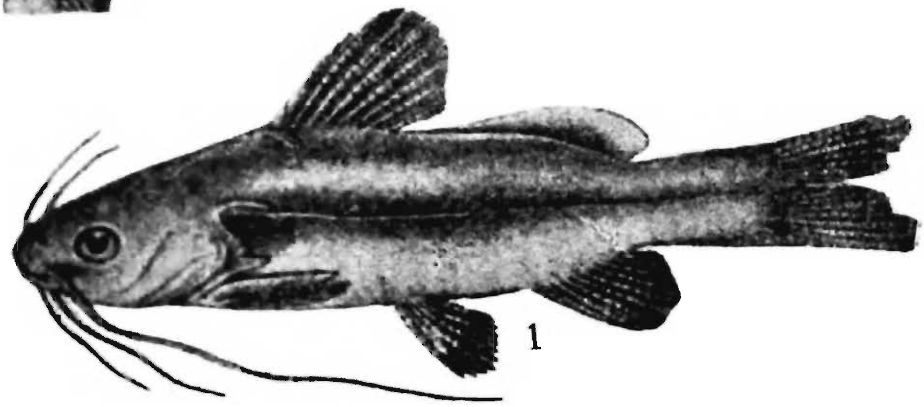
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PLATE III

Pangasius pangasius (Ham.) (After K. S. Misra)

PLATE III

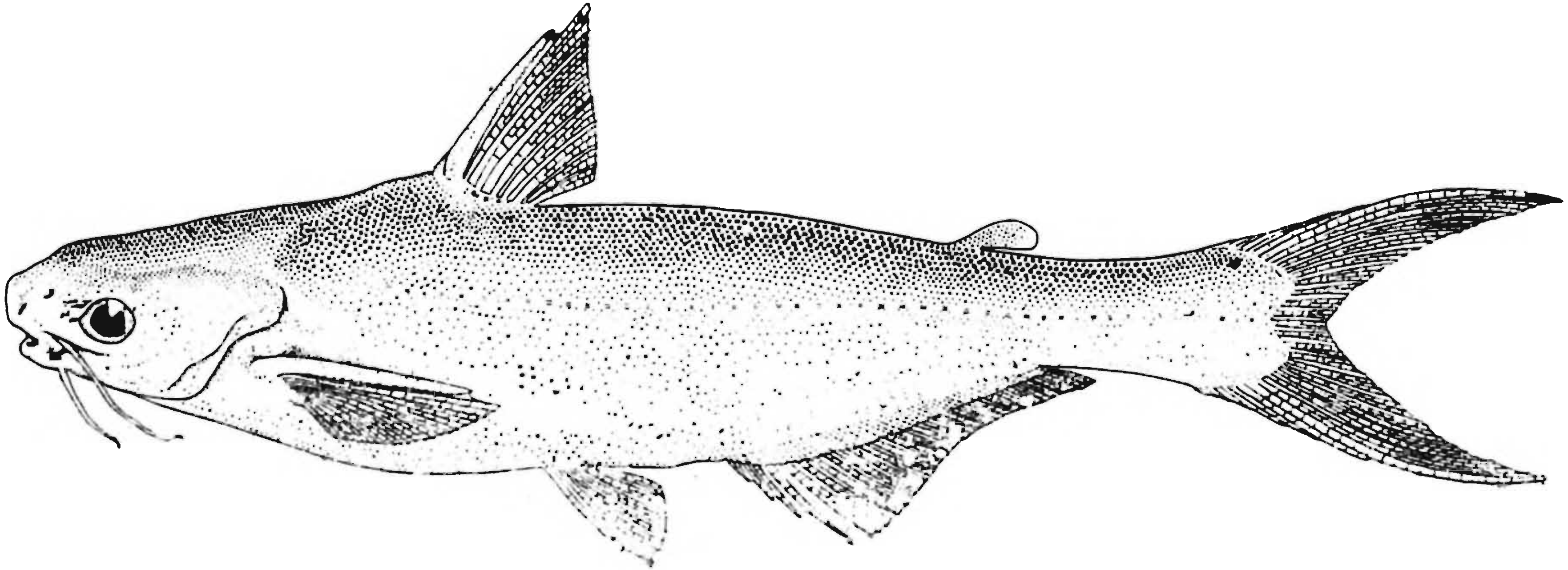


PLATE IV

Batasio batasio (Ham.)

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body

Fig. 3. Ventral view of head and anterior part of body (After S. L. Hora & N. C. Law)

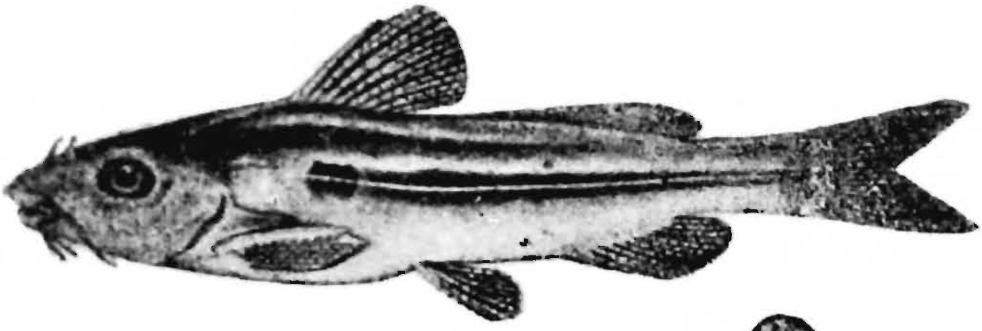
Batasio tengana (Ham.)

Fig. 4. Lateral view

Fig. 5. Dorsal view of head and anterior part of body

Fig. 6. Ventral view of head and anterior part of body (After S. L. Hora & N. C. Law)

PLATE IV



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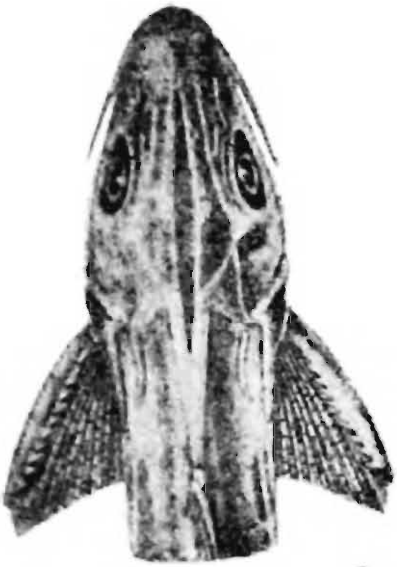

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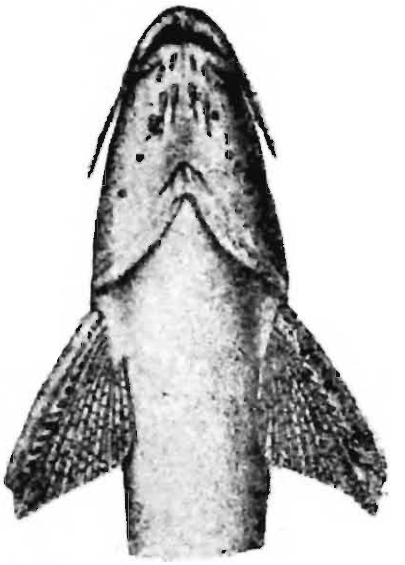

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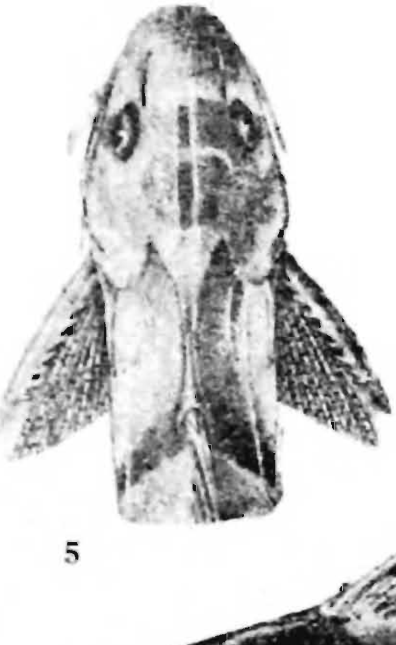

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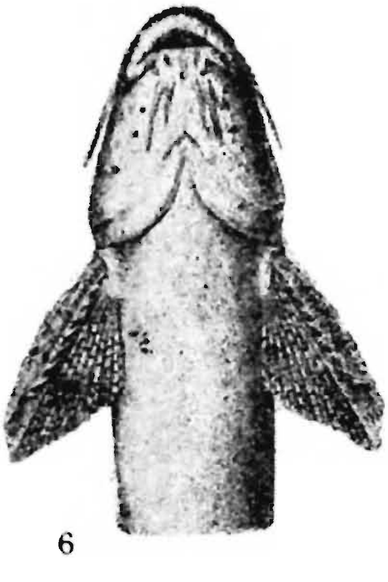

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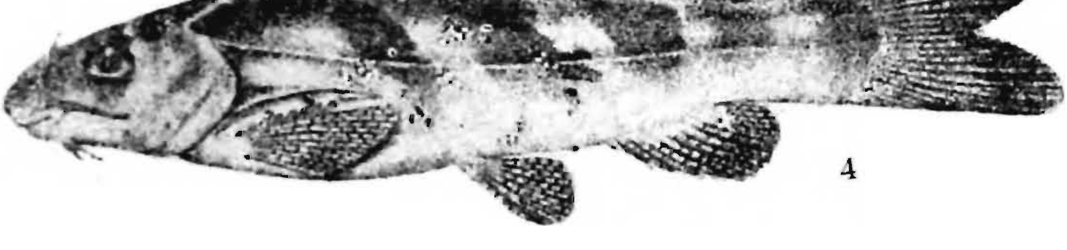

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PLATE V

Bastasio travancoria Hora & Law

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body

Fig. 3. Ventral view of head and anterior part of body

(After S. L. Hora & N. C. Law)

Gagata cenia (Ham.)

Fig. 4. Dorsal view of head and anterior part of body

Fig. 5. Ventral view of head and anterior part of body

(After S. L. Hora & N. C. Law)

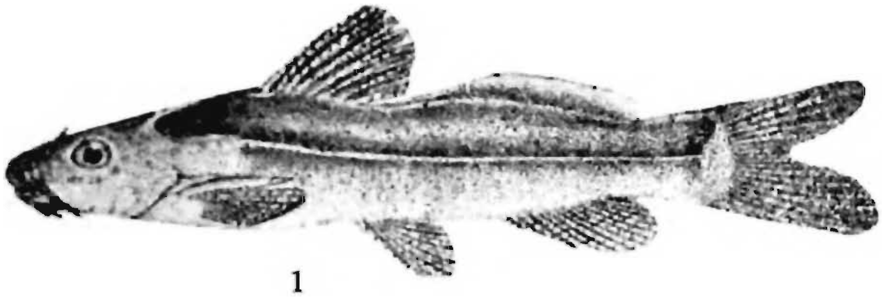
Gagata gagata (Ham.)

Fig. 6. Dorsal view of head and anterior part of body

Fig. 7. Ventral view of head and anterior part of body

(After S. L. Hora & N. C. Law)

PLATE V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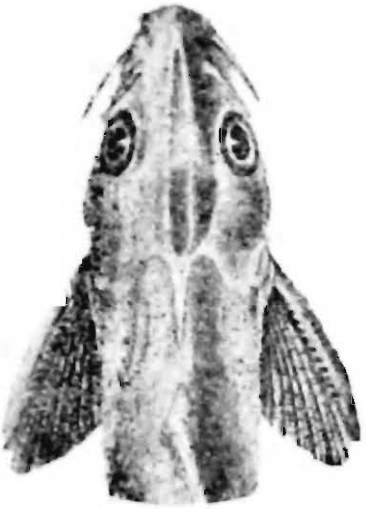
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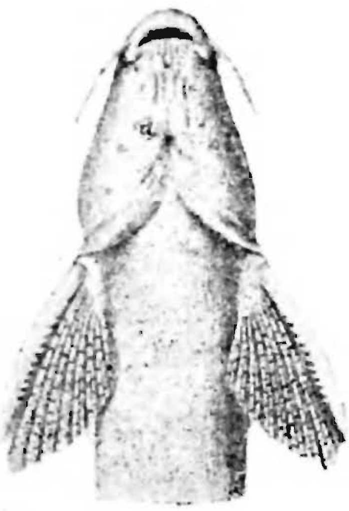
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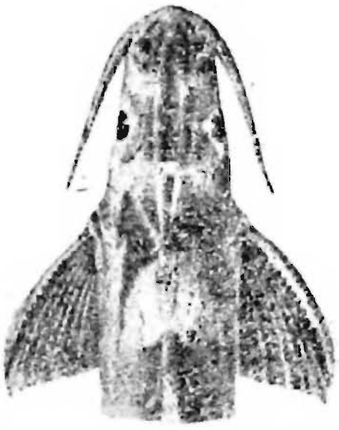
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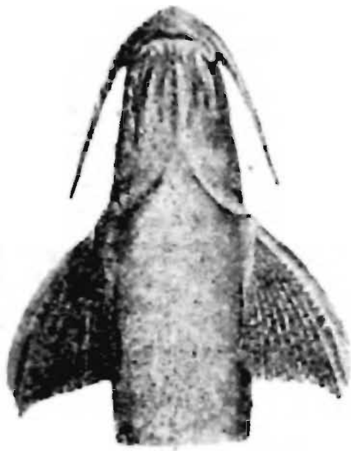
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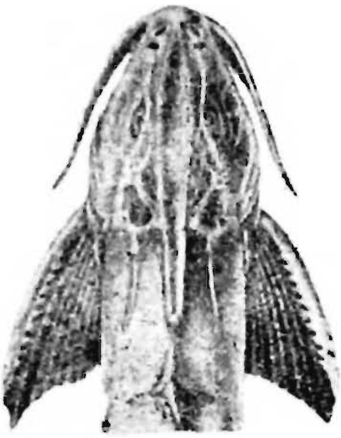
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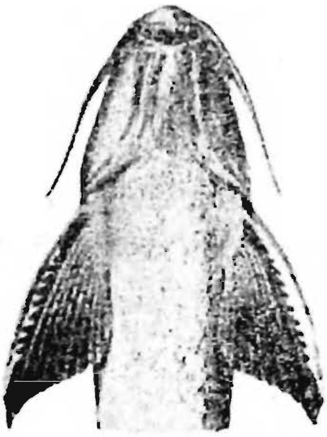
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PLATE VI

Gagata itchkea (Sykes)

Fig. 1. Dorsal view of head and anterior part of body

Fig. 2. Ventral view of head and anterior part of body (After S. L. Hora & N.C. Law)

Gagata nangra (Ham.)

Fig. 3. Dorsal view of head and anterior part of body

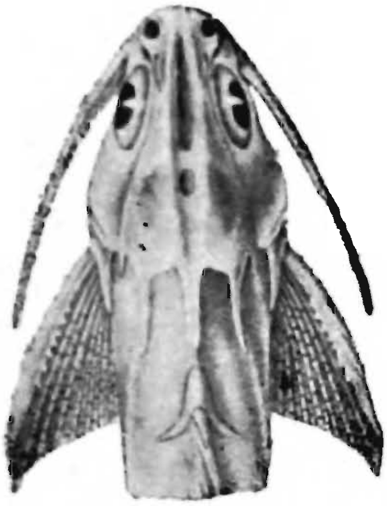
Fig. 4. Ventral view of head and anterior part of body (After S. L. Hora & N. C. Law)

Gagata viridescens (Ham.)

Fig. 5. Dorsal view of head and anterior part of body

Fig. 6. Ventral view of head and anterior part of body (After S. L. Hora & N. C. Law)

PLATE VI



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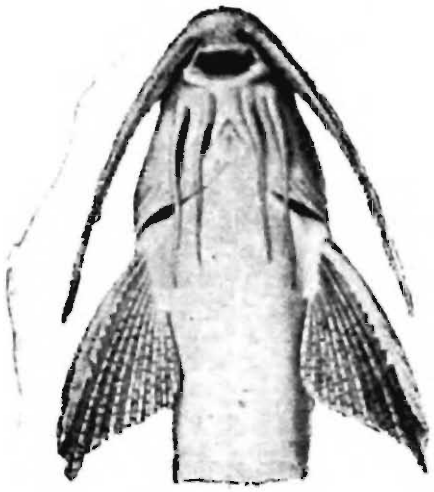

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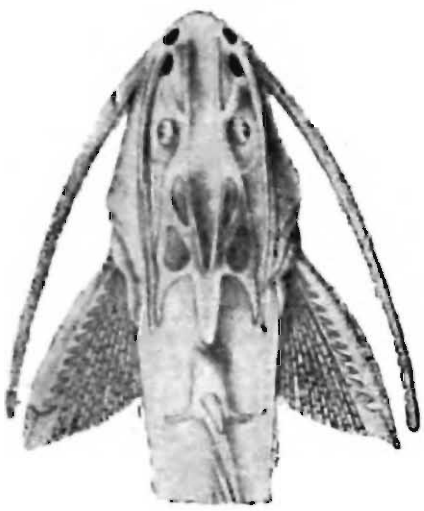

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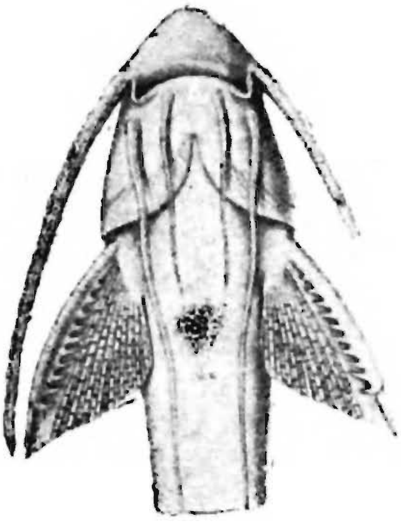

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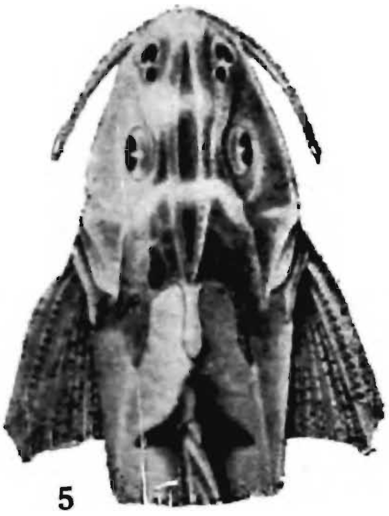

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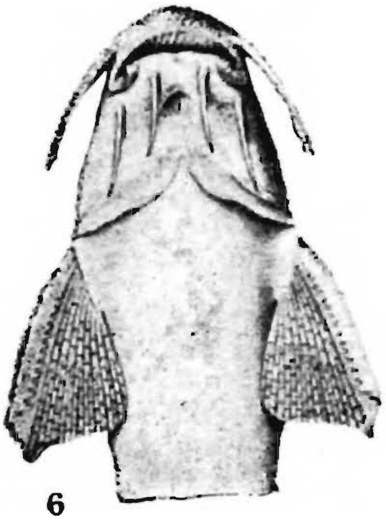

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PLATE VII

Erethistes pusillus M. &. T.

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body

Fig. 3. Ventral view of head and anterior part of body

Fig. 4. Air bladder (After S. L. Hora)

Fig. 5. Lateral view of the photograph copy of Müller and Troschel's drawing.

Fig. 6. Dorsal view of the photograph copy of Müller & Troschel's drawing.

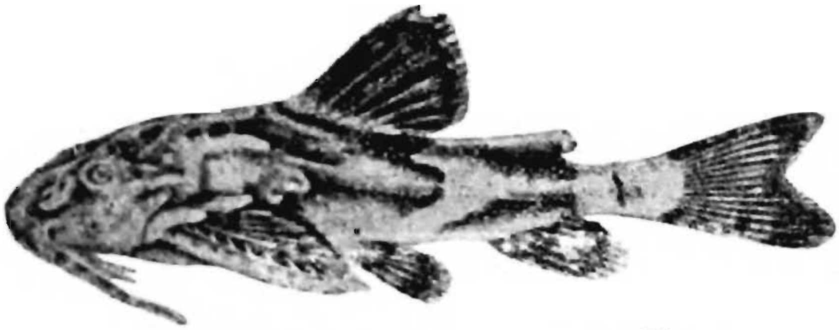
Erethistoides montana montana Hora

Fig. 7. Lateral view

Fig. 8. Dorsal view of head and anterior part of body

Fig. 9. Ventral view of head and anterior part of body (After S. L. Hora)

PLATE VII



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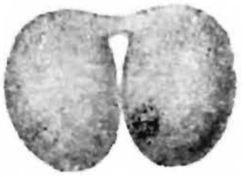

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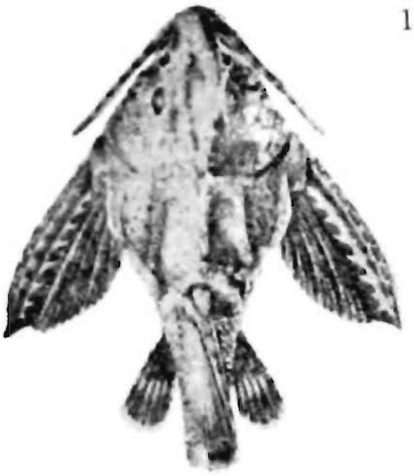

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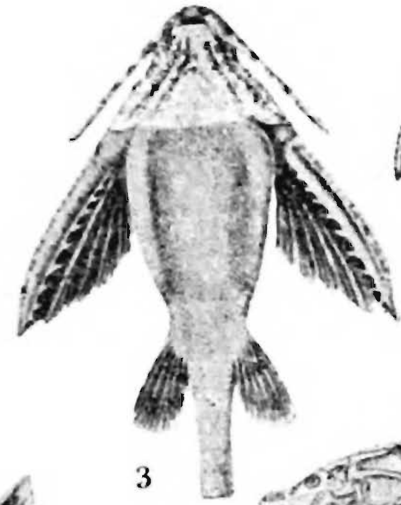

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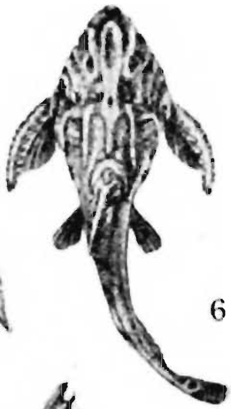

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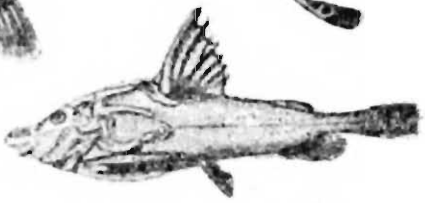

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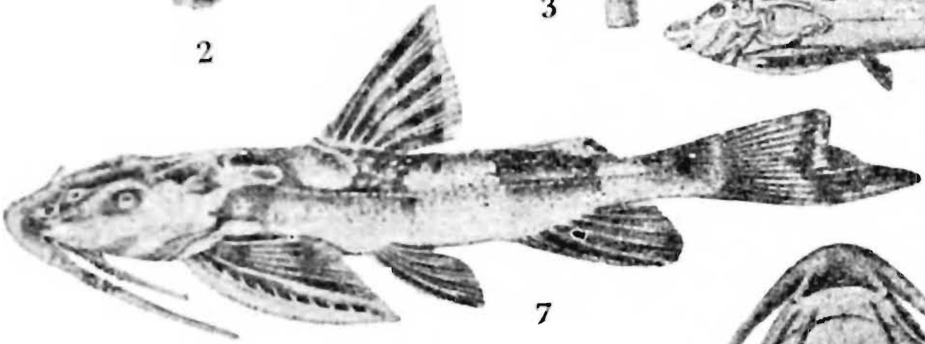

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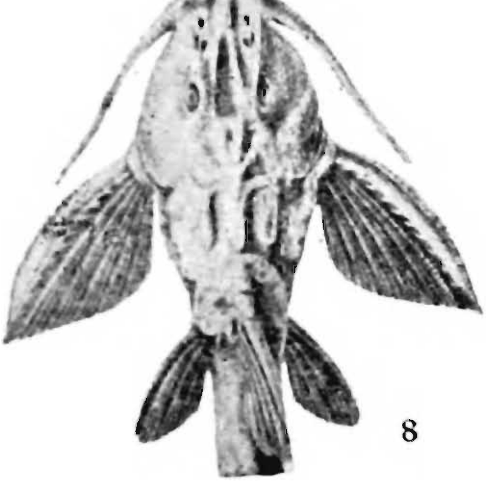

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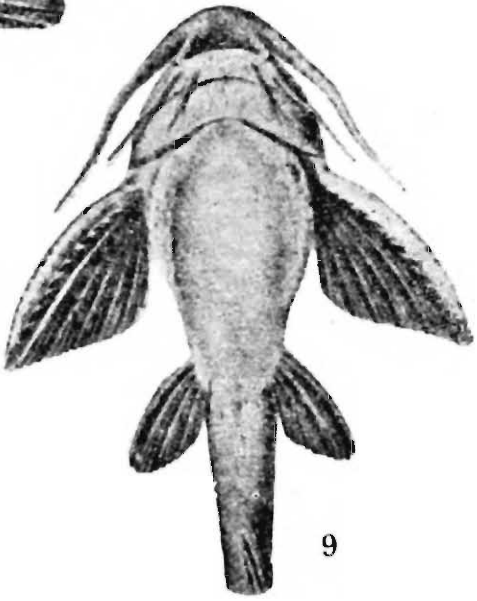

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PLATE VIII

Erethistoides montana pipri Hora

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body

Fig. 3. Ventral view of head and anterior part of body
(After S. L. Hora)

Conta conta (Ham.)

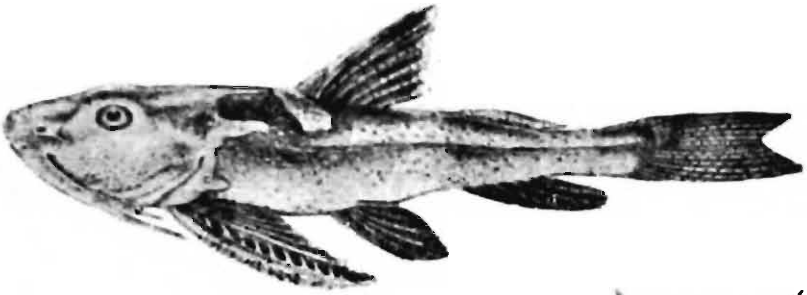
Fig. 4. Dorsal view of head and anterior part of body

Fig. 5. Ventral view of head and anterior part of body

Fig. 6. Air bladder

(After S. L. Hora)

PLATE VIII



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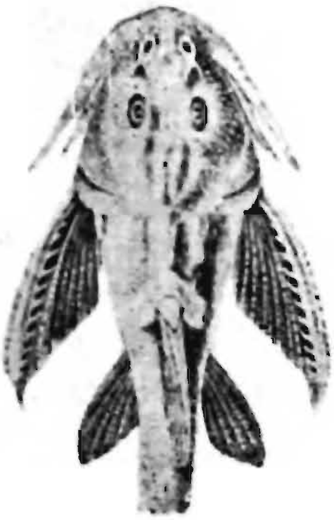

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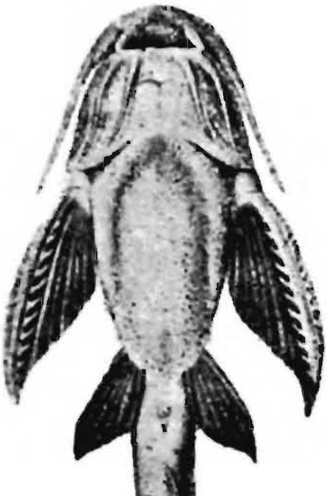

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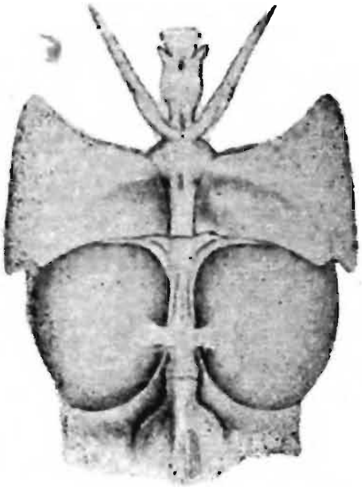

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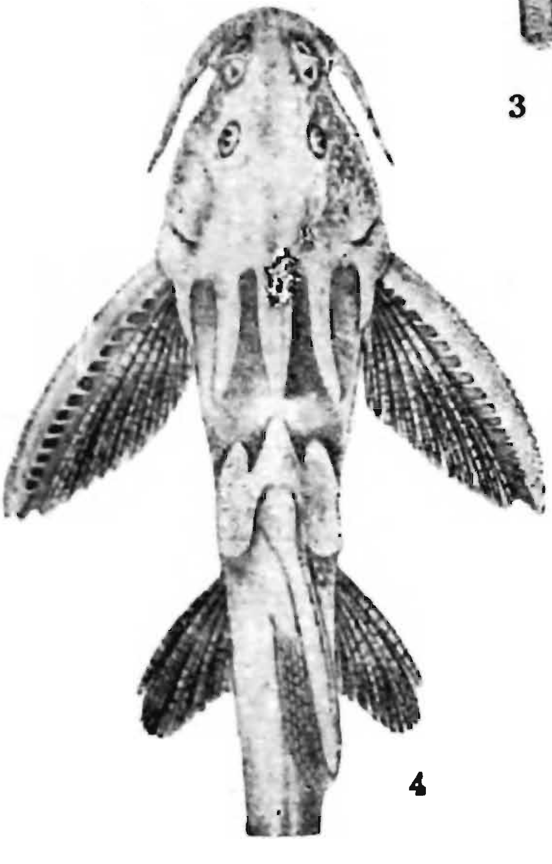

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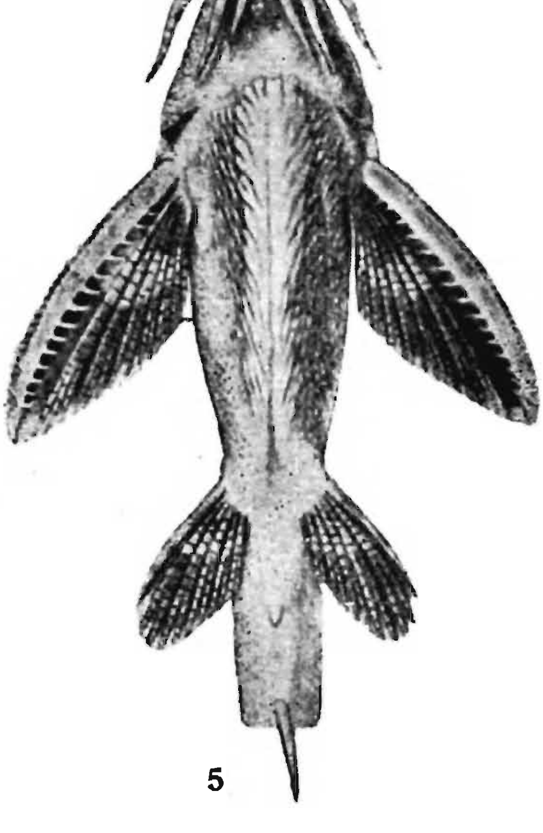

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PLATE IX

Hora horai sp. nov.

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body
Fig. 3. Ventral view of head and anterior part of body

(After S. L. Hora)

Hora jerdoni Day

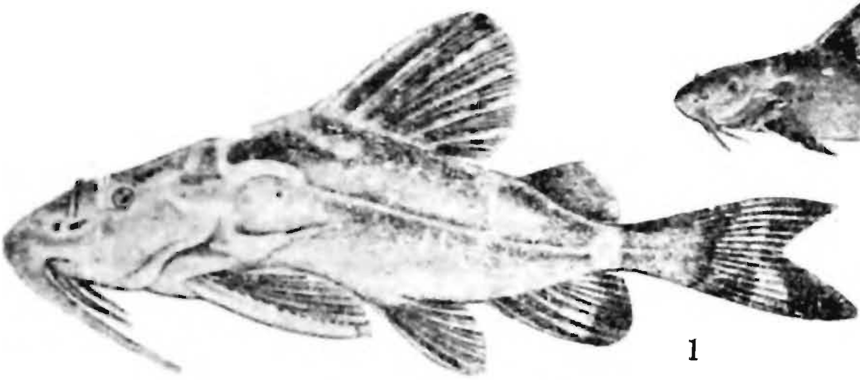
Fig. 4. Dorsal view of head and anterior part of body
Fig. 5. Ventral view of head and anterior part of body
Fig. 6. Air bladder

(After S. L. Hora)

Laguvia asperus (Mc Clelland)

Fig. 7. Lateral view.
Fig. 8. Ventral view of head and anterior part of body
Fig. 9. Mouth (After B. L. Chaudhuri)

PLATE IX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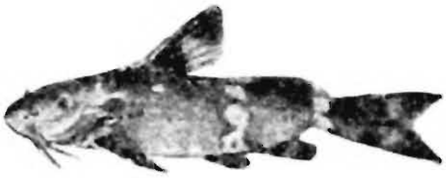
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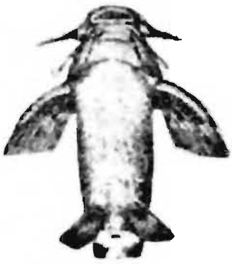
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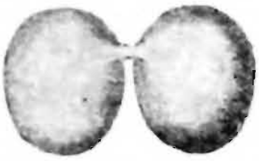
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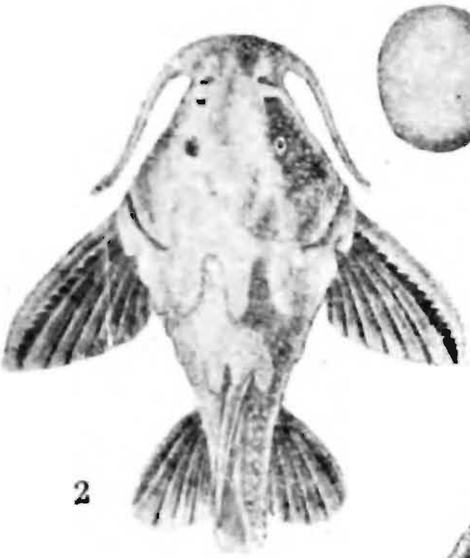
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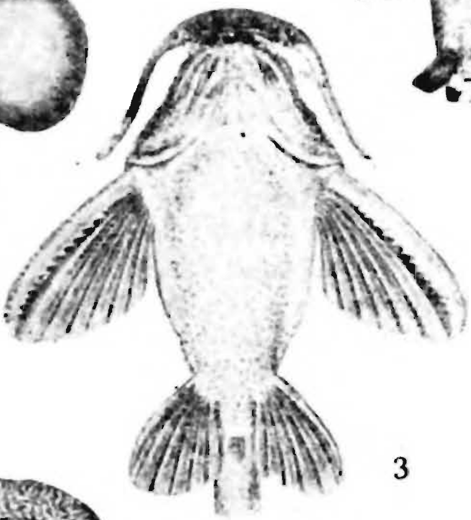
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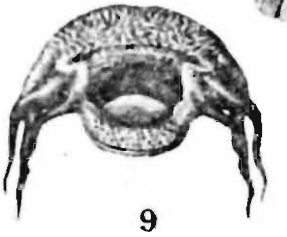
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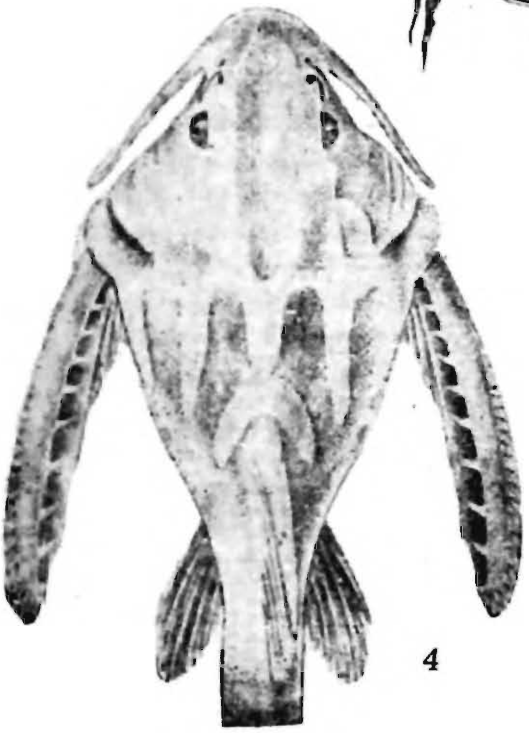
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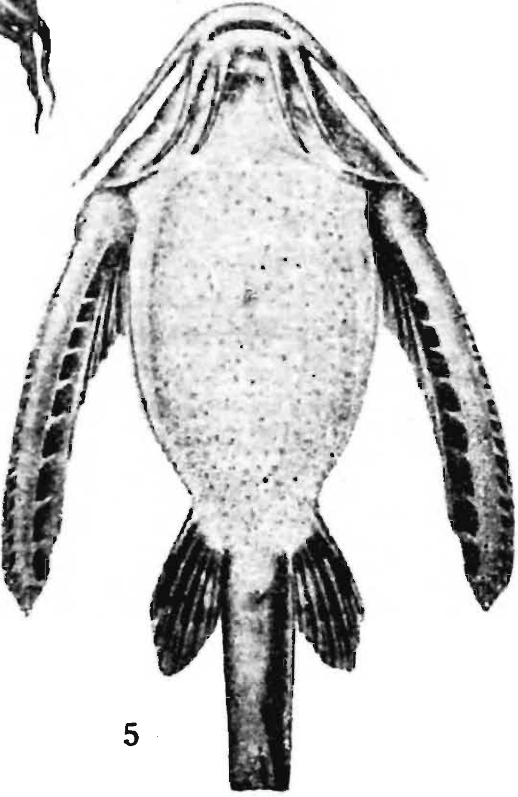
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PLATE X

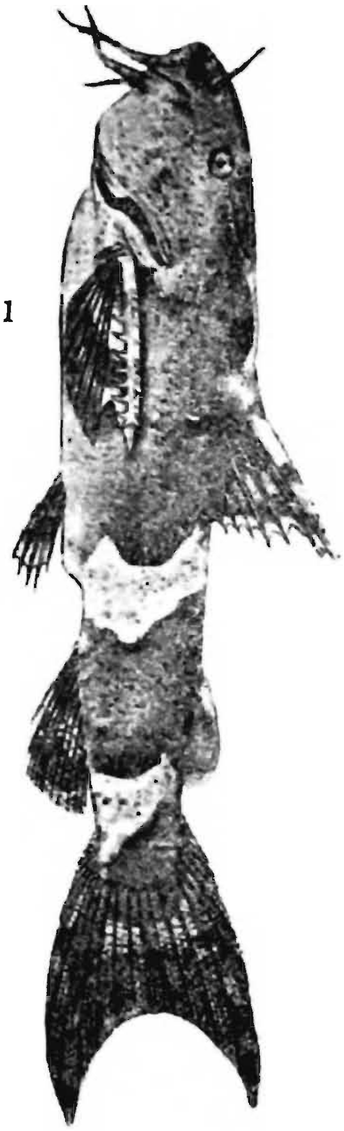
Laguvia ribeiroi Hora

Fig. 1. Lateral view (After S. L. Hora)

Laguvia shawi Hora

Fig. 2. Lateral view (After S. L. Hora)

PLATE X



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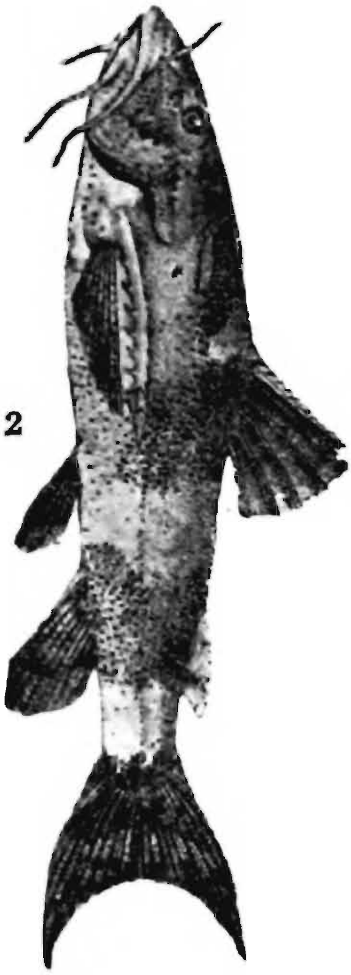

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PLATE XI

Glyptothorax annandalei Hora

Fig. 1. Lateral view

Glyptothorax brevipinnis Hora

Fig. 2. Lateral view (After S. L. Hora)

Glyptothorax cavia (Ham.)

Fig. 3. Lateral view (After S. L. Hora)

Fig. 4. Ventral view of head and anterior part of body (After S. L. Hora & M.A.S. Menon)

Glyptothorax conirostre poonaensis Hora

Fig. 5. Lateral view

Fig. 6. Ventral view of head and anterior part of body (After S. L. Hora)

Glyptothorax lonah (Sykes)

Fig. 7. Lateral view

Fig. 8. Ventral view of head and anterior part of body (After S. L. Hora)

Glyptothorax pectinopterus (Mc Clelland)

Fig. 9. Lateral view

Fig. 10. Ventral view of head and anterior part of body (After S. L. Hora)

PLATE XI

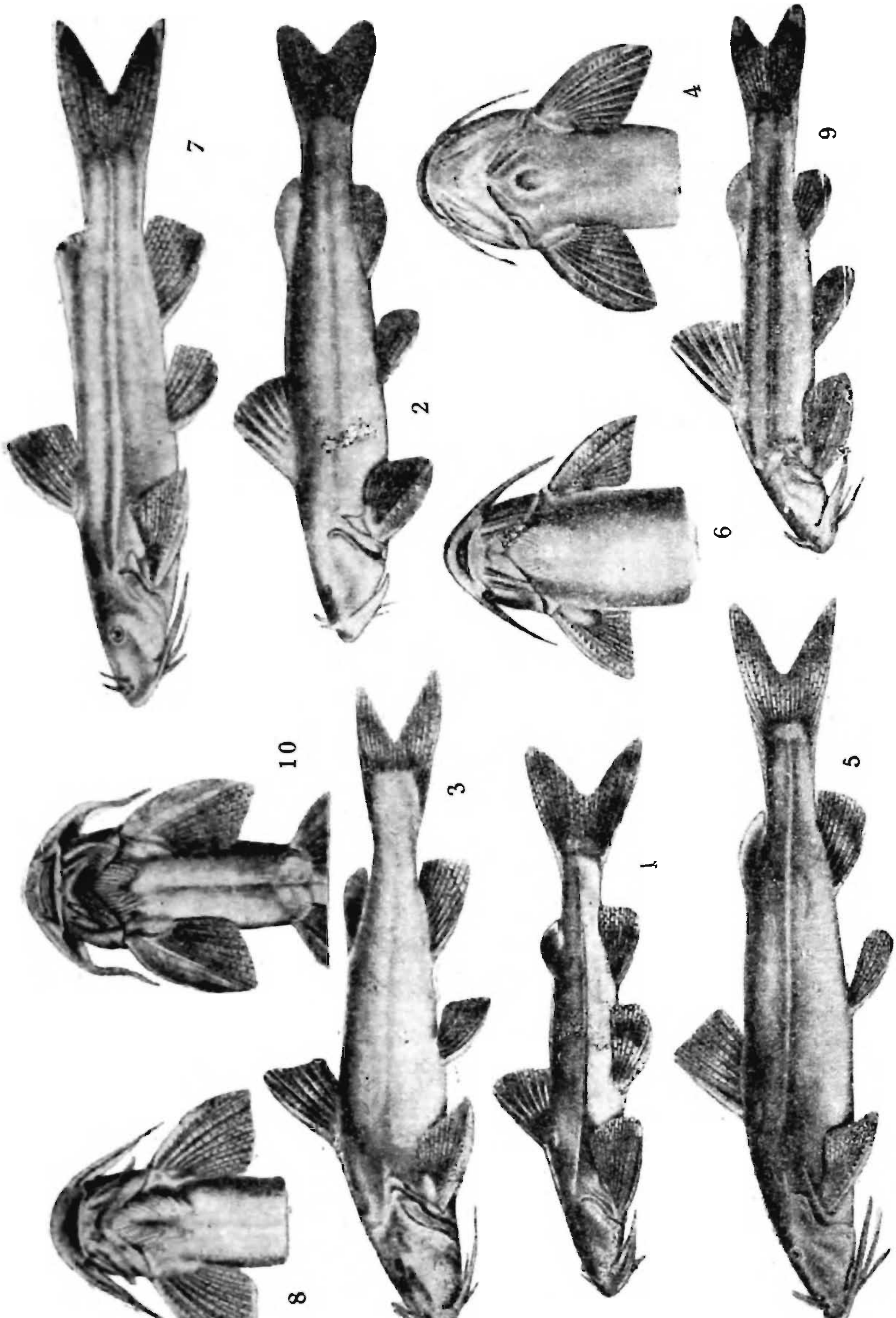


PLATE XII

Glyptothorax saisii (Jenkins)

Fig. 1. Lateral view (After S. L. Hora)

Glyptothorax telchitta (Ham.)

Fig. 2. Lateral view

Fig. 3. Dorsal view of head and anterior part of body

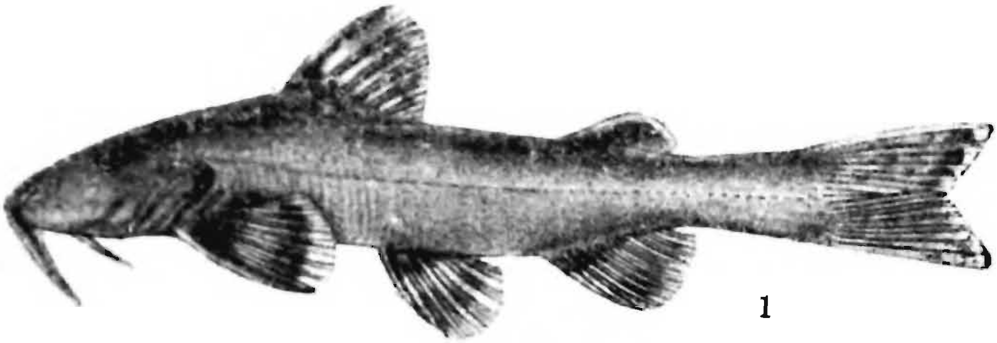
Fig. 4. Ventral view of head and anterior part of body (After S. L. Hora & M. A. S. Menon)

Glyptothorax trewavasae Hora

Fig. 5. Lateral view

Fig. 6. Ventral view of head and anterior part of body (After S. L. Hora)

PLATE XII



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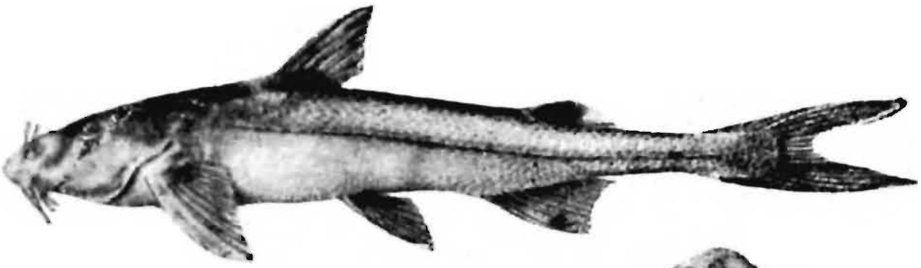

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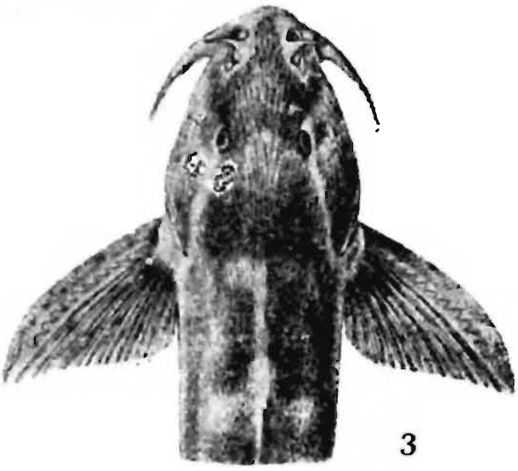

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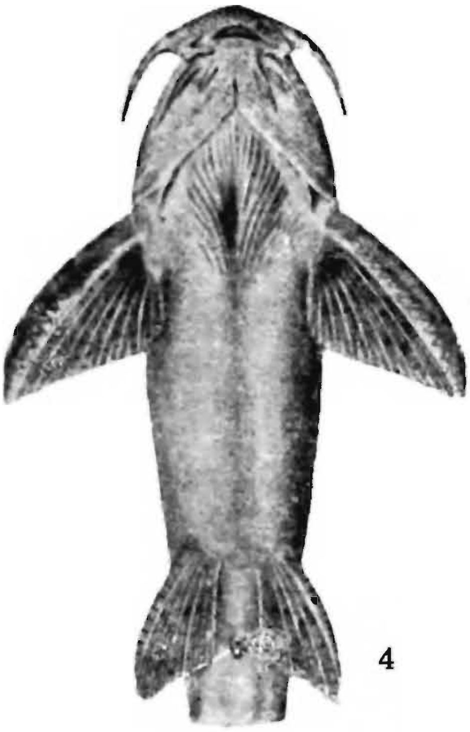

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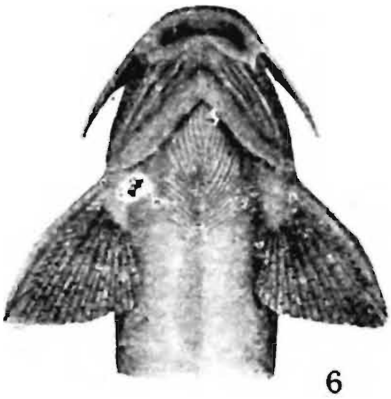

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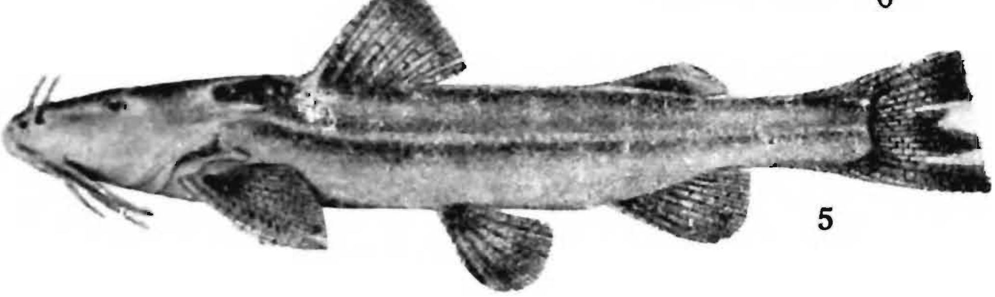

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PLATE XIII

Euchiloglanis feae (Vinciguerra)

Fig. 1. Lateral view

Fig. 2. Dorsal view of head and anterior part of body

Fig. 3. Ventral view of head and anterior part of body
(After D. Vinciguerra)

Euchiloglanis *hodgarti* (Hora)

Fig. 4. Lateral view

Fig. 5. Dorsal view of head and anterior part of body

Fig. 6. Ventral view of head and anterior part of body
(After S. L. Hora)

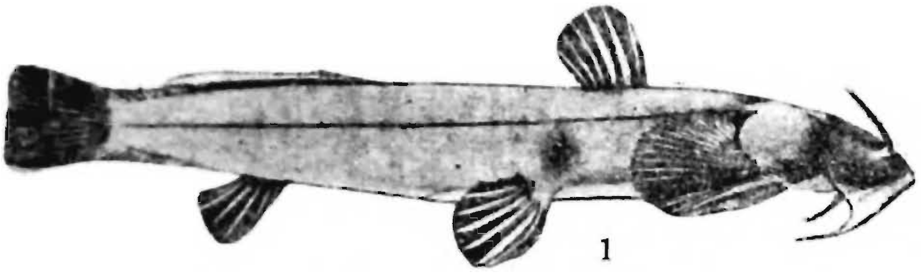
Coraglanis kishinouyei (Kimura)

Fig. 7. Lateral view

Fig. 8. Dorsal view of head and anterior part of body

Fig. 9. Ventral view of head and anterior part of body
(After S. L. Hora & E. G. Silas)

PLATE XIII



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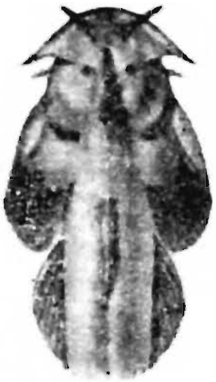

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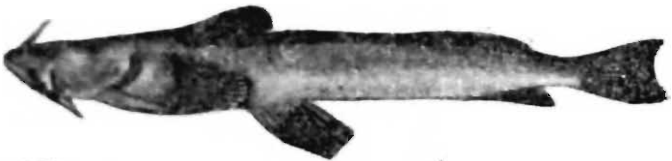

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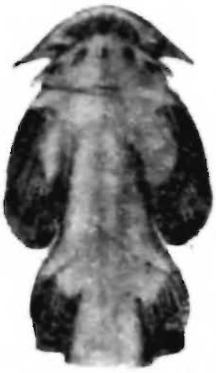

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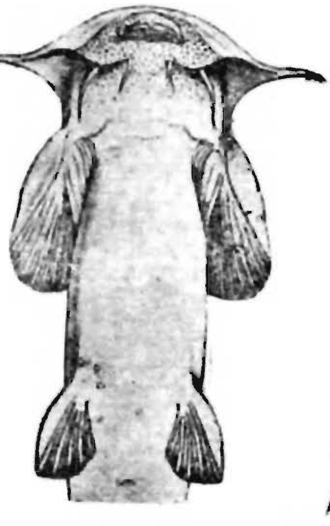

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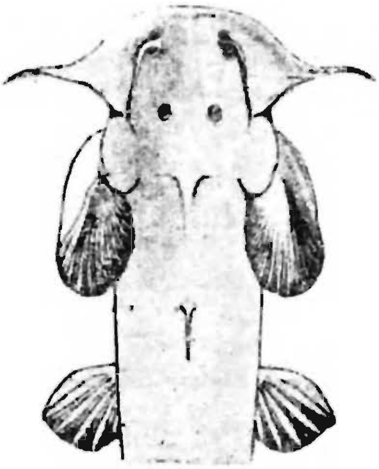

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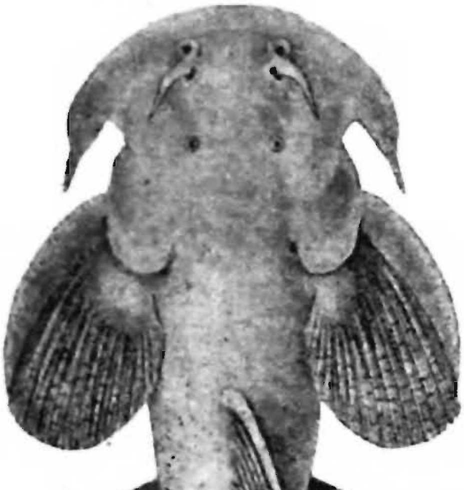

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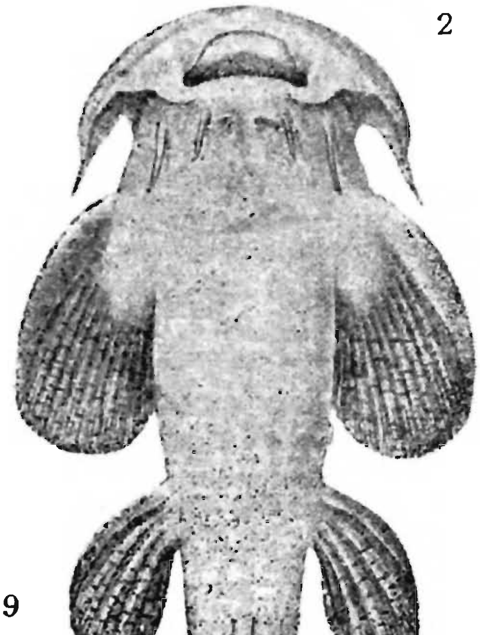

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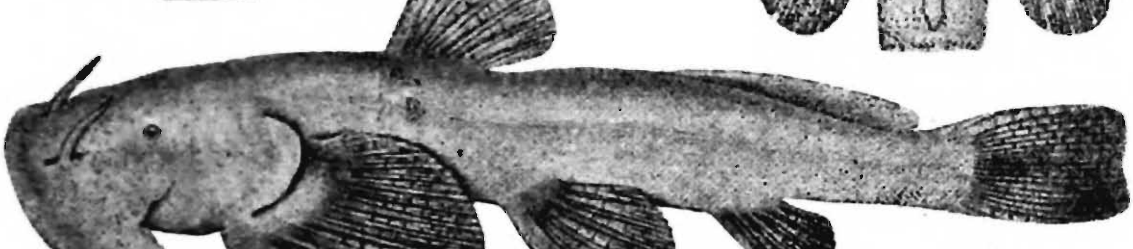

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PLATE XIV

Exostoma labiatus (Mc Clell and)

Fig. 1. Lateral view (After S. L. Hora)

Exostoma stuarti (Hora)

Fig. 2. Lateral view

Fig. 3. Dorsal view of head and anterior part of body

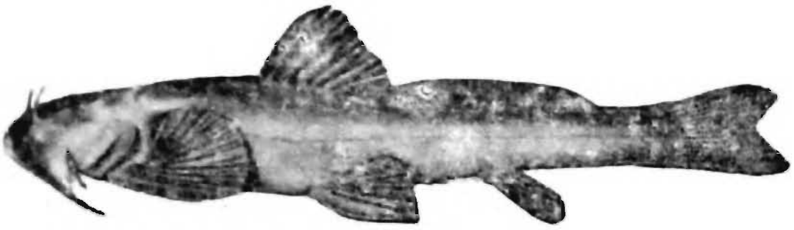
Fig. 4. Ventral view of head and anterior part of body (After S. L. Hora)

Exostoma vinciguerrae Regan

Fig. 5. Lateral view

Fig. 6. Dorsal view of head and anterior part of body

Fig. 7. Ventral view of head and anterior part of body (After S. L. Hora)



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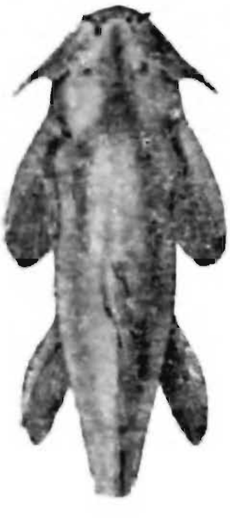

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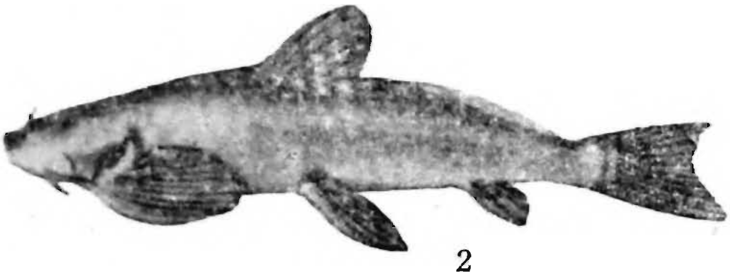

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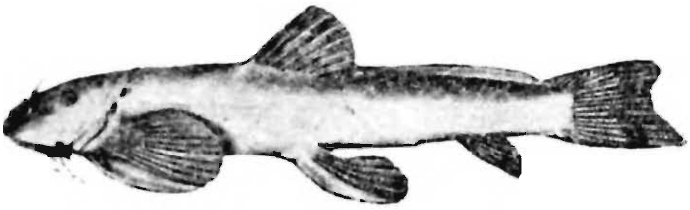

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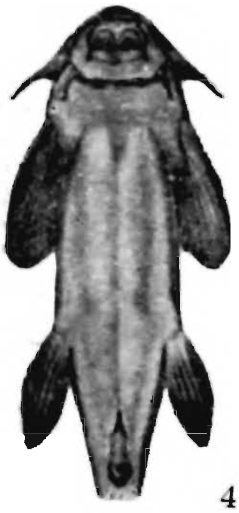

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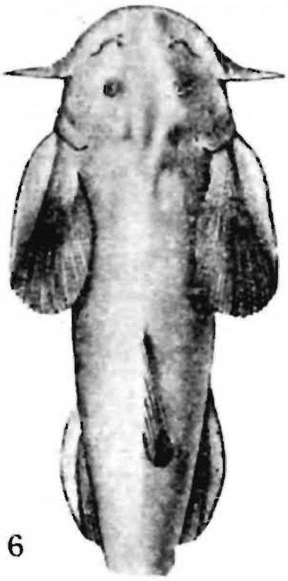

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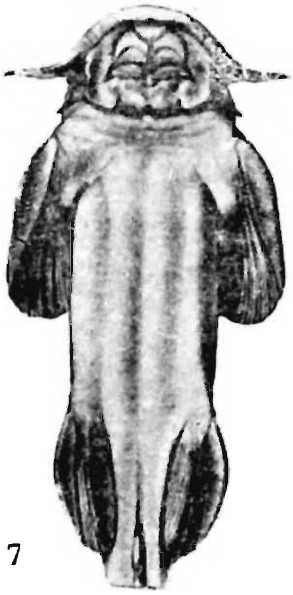

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PLATE XV

Glyptosternon maculatum (Regan)

Fig. 1. Dorsal view of head and anterior part of body

Fig. 2. Ventral view of head and anterior part of body (After S. L. Hora)

Oreoglanis macropterum (Vinciguerra)

Fig. 3. Lateral view (After D. Vinciguerra)

Fig. 4. Dorsal view of head and anterior part of body

Fig. 5. Ventral view of head and anterior part of body

Pseudecheheis sulcatus (Mc Clelland)

Fig. 6. Ventral view of head and anterior part of body (After S. L. Hora)

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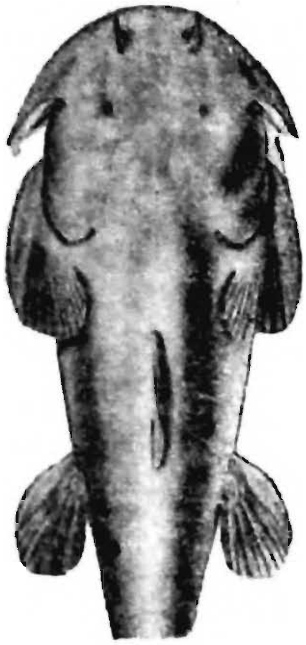
PLATE XV



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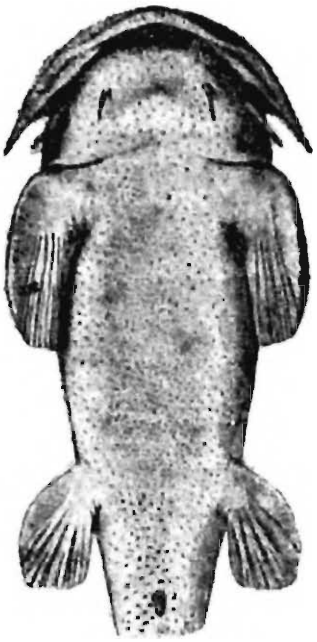

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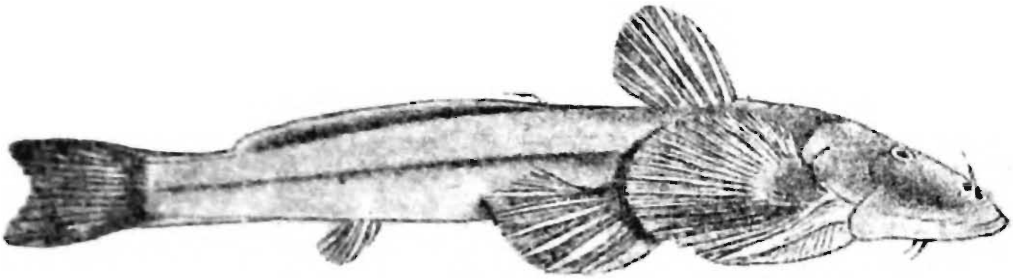

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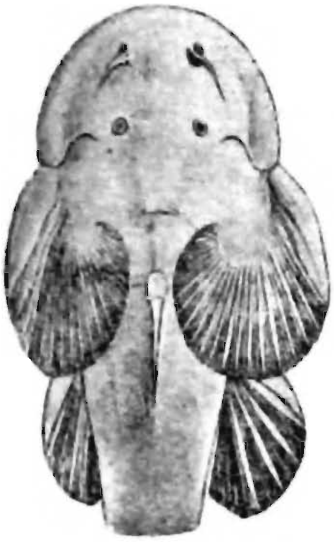

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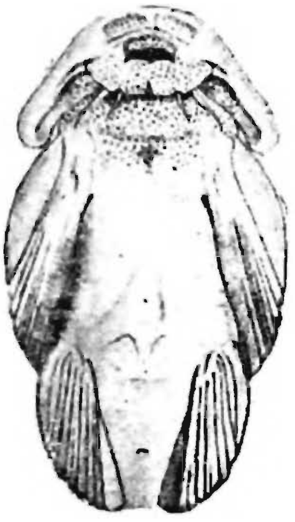

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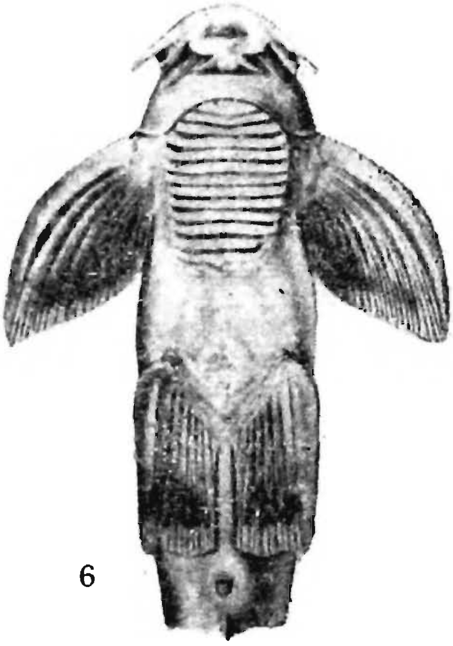

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